Proceedings

5th National Conference for Nonpoint Source and Stormwater Outreach

Achieving Results with Tight Budgets

May 11–14, 2009

Doubletree Hotel & Executive Meeting Center Portland-Lloyd Center

Portland, Oregon

www.epa.gov/nps/outreach2009

Sponsored by:

EPA
United States
Environmental Protection
Agency

Applying knowledge to improve water quality
National
Water Program
A Partnership of USDA CSREES
& Land Grant Colleges and Universities

Contents

Thursday, May 14, 2009

All PowerPoint presentations from the conference are available online in PDF format at www.epa.gov/nps/outreach2009/agenda.html.

Foreword

The Fifth National Conference for Nonpoint Source and Stormwater Outreach was held May 11–14, 2009 in Portland, Oregon. The conference took place in the midst of the deepest economic downturn since the Great Depression nearly 80 years prior. Local and state travel freezes across the nation severely curtailed attendance, making this proceedings document an even more important record of the valuable information exchange that took place at this conference. The PowerPoint presentations from the conference are available online at www.epa.gov/nps/outreach2009/agenda.html.

We learned from our keynote speaker, Nancy Lee, the importance of thinking in terms of pounds of pollutants reduced per dollar that our outreach efforts generate. While many of us feel challenged to justify the cost of doing outreach in tough economic times, Nancy exhorted us to demonstrate that *effective* outreach is one of the soundest investments that we should make. The health and restoration of our waterways deserve no less.

The theme of the 2009 conference was "Achieving Results with Tight Budgets" and the presenters and workshop leaders answered that call by providing a first-class mix of training workshops and presentations that feature some of the finest examples of nonpoint source outreach nationally. Many attendees chose to earn Continuing Education Units through our partnership with USDA and the University of Wisconsin.

The selection of Portland as host city was deliberate. Portland is a world leader in the practice of sustainable stormwater management and a model for stakeholder involvement and community outreach. Speakers representing federal, state and local nonpoint source and stormwater programs presented the latest applied research and techniques in changing key behaviors of our target audiences to improve and protect the health of our nation's waters.

The conference drew attendees and presenters from 31 states, two countries and two U.S. territories. Most of the attendees represented state and local government agencies and organizations. Post-conference evaluations bore out that this conference proved invaluable to those who were able to attend.

Many of the presentations and workshops focused on how to best promote low impact and green development, and sustainable stormwater practices. Those who attended found the conference stimulating and are looking forward to creatively applying their experiences locally to improve and protect their environment. Those who were not able to attend but who take the time to peruse these pages and apply their lessons can be similarly blessed.

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Washington, DC

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Contractor Support

Jennifer McDonnell, Melissa DeSantis, Amber Marriott, and Elsa Mittelholtz, Tetra Tech, Inc.

Conference Agenda

Monday, May 11, 2009 Pre-Conference Workshops

9:00 a.m. – 4:00 p.m.
Full Day
Lunch is included

Changing Public Behavior ..... Broadway Room

Learn to Apply Social Assessment to Water Management Strategies

Elaine Andrews and Kate Reilly, University of Wisconsin–Extension, Environmental Resources Center

9:00 a.m. – 4:00 p.m.
Full Day
Lunch is included

Getting in Step ..... Halsey Room

Conducting Effective Stormwater/Nonpoint Source Outreach Campaigns

Melissa DeSantis and Jennifer McDonnell, Tetra Tech, Inc.

9:00 a.m. – 4:00 p.m.
Full Day
Lunch is included

Eyes on the Prize ..... Weidler Room

Morning Session: **An Evaluation Primer for NPS and Stormwater Programs**

Afternoon Session: **Overview of Social Indicators Evaluation System & Applied Survey Development Skills**

Rebecca Power, Jennifer Kushner, Ken Genskow, and Linda Prokopy, University of Wisconsin–Extension

8:30 a.m. – 12:00 p.m.
Half Day
Lunch is not included

Onsite Wastewater Education ..... Roosevelt Room

Research-Based Outreach Strategies to Help Minimize NPS Pollution Risks

Bruce Lesikar, Texas A&M University System; David Lindbo, North Carolina State University; George Loomis, University of Rhode Island
(Instructors are with the USDA Cooperative States Research, Education, and Extension Service and the Consortium of Institutes for Decentralized Wastewater Treatment)

5:00 p.m. – 6:00 p.m.

Conference Registration Opens

Tuesday, May 12, 2009

7:30 a.m. – 5:00 p.m. **Conference Registration**

9:00 a.m. **Welcoming Remarks** ..... Multnomah Room

Dean Marriott, Director, City of Portland Bureau of Environmental Services
Dr. Dick Pedersen, Director, Oregon Department of Environmental Quality

9:30 a.m. – 10:30 a.m. **Keynote Address** ..... Multnomah Room

Social Marketing in Tough Times: Show Them the *Pounds per Penny*
Nancy Lee, Author and President of Social Marketing Services, Inc.

10:30 a.m. – 11:00 a.m. **Break**

11:00 a.m. – 12:30 p.m. **Session A1: Promoting Green Development with Community-Based Outreach** ..... Holladay Room

Moderator: Leesa Souto, University of Central Florida

— **Changing Yard Care Behaviors: A Multi-Pronged Education Campaign Addressing Several Target Audiences and Focusing on Measurable Outcomes**
Jennifer Krupowicz, Charlotte–Mecklenburg Storm Water Services, North Carolina

— **Falls Hill-Poplar Heights Residential LID Demonstration Project & Conservation Landscaping Incentive Program: Sustainable Stormwater Management at the Community Level**
Christin Jolicoeur, Northern Virginia Soil & Water Conservation District

— **Rain Barrels as a Stepping Stone to Better Stormwater Management at Home**
Aileen Winquist, Arlington County Department of Environmental Services, Virginia

Session B1: Creative Outreach Methods ..... Broadway Room

Moderator: Tonya Dombrowski, Oregon Department of Environmental Quality

— **Reaching Our Audiences with Outcome-Based Outreach: The Lake Merritt Clean Lake Program**
Dr. Richard L. Bailey, The Lake Merritt Institute, California

— **Integrating Stormwater Outreach, Public Art, Filtration, LEED Silver Certification, and LID—Yes It Can Be Done!**
Mary Morse, City of San José Environmental Services Department, California

— **Outreach Portland Style: Promoting Green Development**
Jan Seago, University of Idaho Extension, Washington

12:30 p.m. – 1:30 p.m. **Luncheon Address** ..... Cascade Ballroom

The City of Portland and ProjectDX—Animating Local, Private, Green Stormwater Action
Tom Puttman, Transformative Sustainable Solutions, Inc., Oregon
Dan Vizzini, Portland Bureau of Environmental Services, Oregon

1:30 p.m. – 3:00 p.m.

Session A2: Promoting Green Development–Using Mass Media ..... Holladay Room

Moderator: Stacey Eriksen, U.S. Environmental Protection Agency, Region 8

— **Greening the Grass: Encouraging Mainers to Adopt Low Impact Lawn Care Practices**
Jami Fitch, Cumberland County Soil and Water Conservation District, Maine

— **Watershed Watch – Lessons Learned from Seven Years of Implementation**
Mary Morse, City of San José Environmental Services Department, California
Sandi Manor, AdManor, Inc., California

Session B2: Using Research to Reach Our Audiences .... Broadway Room

Moderator: Don Waye, U.S. Environmental Protection Agency, Headquarters

— **Scoping Workshops and Focus Groups Ensure Successful Outreach Programs: Case Studies from Oregon**
Derek Godwin, Oregon State University Extension Service

— **Pilot-Testing Performance-Based Incentives for Agricultural Pollution Control in Iowa and Vermont**
William Matthews, Oregon Department of Agriculture

— **The Clean Water Word: Why Your Stakeholders Are Your Best Marketers**
Ely Teragli, Clean Water Services, Oregon

3:00 p.m. – 3:30 p.m.

Break

3:30 p.m. – 5:00 p.m.

Session A3: MS4 Partnering ..... Holladay Room

Moderator: Claudia Lewis, Plan C Initiative, Florida

— **Forming, Storming and Norming: The Creation of STORM (STormwater Outreach for Regional Municipalities)**
Dave Ward, Snohomish County Public Works, Surface Water Management, Washington
Doug Rice, King County Department of Natural Resources and Parks, Stormwater Services, Washington

— **Northern Virginia Clean Water Partners Use Radio to Influence Resident Behavior**
Aileen Winquist, Arlington County Department of Environmental Services, Virginia

— **Spend Less, Teach More: A Model for Collaborative Stormwater Outreach and Education**
Angie Hong, East Metro Water Resource Education Program, Minnesota

Workshop B3: All About NEMO: A Proven Model for Educating Communities on Stormwater ..... Broadway Room

Dave Dickson and John Rozum, Center for Land Use Education and Research, Connecticut

Wednesday, May 13, 2009

7:30 a.m. – 4:00 p.m. **Conference Registration**

8:15 a.m. – 9:45 a.m. **Session A4: Programs Promoting Green Development** ..... Broadway Room

Moderator: Kathy Shay, City of Austin, Texas

— **Blue Thumb—Planting for Clean Water: Using Social Marketing Techniques to Promote Native Gardens, Rain Gardens and Shoreline Plantings within Priority Watershed Areas**
Angie Hong, East Metro Water Resource Education Program, Minnesota

— **Lake Clarity Crediting Program for Lake Tahoe**
Jeremy Sokulsky, Environmental Incentives, LLC, California

— **RiverSmart Homes: Promoting Stormwater Management on Residential Properties**
Shelby Laubhan, District of Columbia Department of the Environment

Session B4: Reaching Our Audiences Through University-Based Outreach Programs ..... Multnomah Room

Moderator: Rebecca Power, Wisconsin Cooperative Extension

— **Stormwater Management in Your Backyard: An Extension Education Initiative**
Dr. Christopher Obropta, Rutgers Agricultural Experiment Station, New Jersey

— **Changing Public Behavior: Addressing the Challenges of Applying Social Assessment to Water Management Strategies**
Elaine Andrews and Kate Reilly, Environmental Resources Center, University of Wisconsin, Madison

9:45 a.m. – 10:15 a.m. **Break**

10:15 a.m. – 11:45 a.m. **Session A5: Pictures, Toons & Beyond** ..... Broadway Room

Moderator: Jennifer McDonnell, Tetra Tech, Inc., Virginia

— **Say It with Pictures: Training Kentucky Construction Site Workers in Erosion and Sediment Control**
Barry Tonning, Tetra Tech, Inc., Kentucky

— **A Stormwater Campaign in Cartoons**
Kathy Ottenberg and Kelly Carroll, West Valley Clean Water Program, California

— **Developing and Implementing a Comprehensive Surface Water Education and Outreach Plan for a Rural County**
Pat Pearson, Washington State University Jefferson County Extension

Session B5: Using Technology.....Multnomah Room

Moderator: Stacey Eriksen, U.S. Environmental Protection Agency, Region 8

— **Outreach Skills Training Through the South Carolina Department of Health and Environmental Control "Polluted Runoff Outreach Toolbox"**
Victoria L. Kramer, South Carolina Department of Health and Environmental Control

— **Using GIS-Enabled Tools for Tracking, Reporting and Communicating: Ideas for the Average Administrator**
John Wasiutynski, District of Columbia Department of the Environment

— **EPA Watershed Academy's Use of the Web to Share Information**
Anne Weinberg, U.S. Environmental Protection Agency, Headquarters

11:45 a.m. – 12:45 p.m. **Luncheon Address**..... Cascade Ballroom

Recent Trends and Perspectives on Stormwater in New England

Bob Varney, Senior Vice President, Normandeau Associates, and Regional Administrator, U.S. Environmental Protection Agency, Region 1, 2001–2009

12:45 p.m. – 2:15 p.m. **Session A6: Using Research to Pave the Way for Low Impact Development**..... Broadway Room

Moderator: Tom Davenport, U.S. Environmental Protection Agency, Region 5

— **Addressing Public Perceptions, Understandings and Misunderstanding of Urban Stormwater Initiatives**
Nancy Stalker and Krista Vopicka, City of Calgary Water Resources, Alberta, Canada

— **Using Rainwater to Grow Livable Communities**
Martina Frey, Tetra Tech, Inc., Oregon

12:45 p.m. – 2:15 p.m. **Workshop B6: Pixels and Mashups and Blogs, Oh My! Integrating New Technology into an Effective Nonpoint Source Outreach Program**.....Multnomah Room

John Rozum and Dave Dickson, Center for Land Use Education and Research, Connecticut

2:15 p.m. – 2:30 p.m. **Break**

2:30 p.m. – 4:00 p.m. **Session A7: Research Perspectives into Greener Residential Yards**..... Broadway Room

Moderator: Birgit Widegren, Nevada Division of Environmental Protection

— **Segmenting Residential Lawn Fertilizer Audiences in the Wekiva Study Area**
Leesa Souto, University of Central Florida
Mary B. Collins, University of California, Santa Barbara

Session A7 (continued)

— **Barriers & Strategies to the Adoption of Environmentally Friendly Landscaping: Research & Case Studies**
Claudia Lewis, Plan C Initiative, Florida

— **Conducting Sustainable Landscape Design Charettes for Homeowners: Process and Methodologies**
Gail Hansen De Chapman, University of Florida

Workshop B7: Data to Maps (D2M): A Hands-on Workshop .....Multnomah Room
Cyd Curtis, Janice Huang, and Thomas Davenport, U.S. Environmental Protection Agency, Region 5

4:30 p.m. – 9:30 p.m. **Tour of Meriwether's Skyline Farm Followed By a Farm-To-Table Dinner and the People's Choice Awards at Meriwether's Restaurant**

Thursday, May 14, 2009

7:30 a.m. – 1:00 p.m. **Conference Registration**

8:30 a.m. – 10:00 a.m. **Panel Discussion A8: Overcoming Barriers to Changing Landscape Behaviors** ..... 3 Sisters Room

Julia Burch, Sarasota Bay Estuary Program, Florida
Gail Hansen de Chapman, University of Florida
Claudia Lewis, Plan C Initiative, Florida
Kathy Shay, City of Austin, Texas
Leesa Souto, University of Central Florida
Facilitator: Melissa DeSantis, Tetra Tech, Inc., Virginia

Session B8: 21st Century Challenges and Opportunities ..... Broadway Room

Moderator: Don Waye, U.S. Environmental Protection Agency, Headquarters, DC

— **Light Imprint: Integrating Sustainability and Community Design**
Thomas E. Low, Duany Plater-Zyberk & Company, North Carolina

— **Portland's Stormwater Marketplace: Animating Market Forces for Sustainable Stormwater Management**
Dan Vizzini, Portland Bureau of Environmental Services, Oregon
Tom Puttman, Transformative Sustainable Solutions, Inc., Oregon

— **Addressing Community Concerns about Environmental Health: A Collaborative, Multi-Media Approach for San Diego's Watersheds**
Karen Franz, San Diego Coastkeeper, California

10:00 a.m. – 10:15 a.m. **Break**

10:15 a.m. – 11:45 a.m. **Session A9: Evaluating Impacts** ..... 3 Sisters Room

Moderator: Jan Seago, University of Idaho Extension, Washington

— **Planning and Evaluating Mass Media PSA Campaigns for Stormwater**
Sarah Bruce, North Carolina Clean Water Education Partnership

— **Green from the Ground Up: Evaluating Impacts and Program Effectiveness of a Nature-Friendly Development Practices Education Series**
Megan Kleibacker, Oregon State University Sea Grant Extension

Session B9: Promoting Green Development Through Municipal Programs ..... Broadway Room

Moderator: Tonya Dombrowski, Oregon Department of Environmental Quality

— **Lessons in Citizen Engagement: Embracing Green Infrastructure**
Mandy Stark, City of Lenexa, Kansas

Session B9 (continued)

— **Green Retrofits for Schools via Rain Gardens**
Karen Fuss, Coastal Waccamaw Stormwater Education Consortium, South Carolina

— **People as Part of Stormwater Infrastructure: Integrating Education and Partnerships into a Large-Scale Sustainable Stormwater Management and Watershed Enhancement Program**
Anne Nelson, Rhetta Drennan, and Erica Timm, Portland Bureau of Environmental Services, Oregon

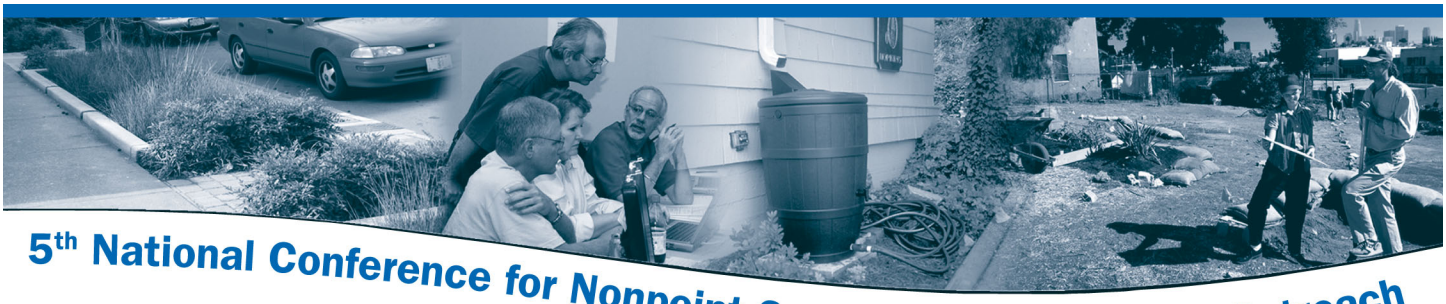
11:45 a.m. – 1:00 p.m. **Lunch and Closing Remarks** .....Multnomah Room
Rebecca Power, University of Wisconsin–Extension

2:00 p.m. – 5:00 p.m. **Field Trip: Portland Low Impact Development Tour (optional)**

2:30 p.m. – 3:30 p.m. **Field Trip: Gerding Theater at the Armory Tour (optional)**

Friday, May 15, 2009

9:00 a.m. – 12:00 p.m. **Field Trip: Portland Low Impact Development Tour (optional)**



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Pre-Conference Workshops Biosketches and Abstracts

Changing Public Behavior Workshop

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Biosketches

Elaine Andrews (M.S., M. AT.) is the Director of the Environmental Resources Center in the College of Agricultural and Life Sciences at the University of Wisconsin where she is a specialist in environmental education, focusing on community and the environment. Ms. Andrews is the former Executive Director of the North American Association for Environmental Education (NAAEE), a Principal Investigator for over 30 national or multi-state projects, and author of numerous publications.

Kate Reilly (B.S., M. Ed.) is an environmental education specialist and outreach program manager at the University of Wisconsin-Madison. Ms. Reilly has developed and managed a number of national environmental education initiatives designed to support the work of natural resource professionals and educators.

Abstract

Learn to Apply Social Assessment to Water Management Strategies—This training uses a hands-on format to build participant skills in analyzing behavior change needs and in adopting strategies for applying behavior change principles to developing an outreach initiative. The workshop includes basic instruction, background material, worksheets, an assignment, and tips for evaluation.

Getting in Step

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Biosketches

Melissa DeSantis is a public outreach specialist with more than 14 years of professional experience. She leads the public outreach department in Tetra Tech's Fairfax, Virginia, office. She manages projects providing environmental education and public outreach services for federal, state and local agencies. The majority of her work has focused on watershed and water pollution prevention education and outreach. She has developed numerous outreach materials including newsletters, Web sites, posters, slide shows, multimedia computer demonstrations, fact sheets, calendars, brochures, and citizen's guides. She has coordinated multiple public meetings, conferences, training workshops, and stakeholder focus groups. She co-wrote the EPA outreach guide, *Getting in Step: A Guide for Conducting Watershed Outreach Campaigns*. Ms. DeSantis is a course instructor for *Getting in Step* public outreach and stakeholder involvement training workshops, as well courses on watershed planning, stormwater management, and the tribal nonpoint source grant program.

Jennifer McDonnell is a public outreach specialist with more than eight years of environmental education and outreach experience with a watershed and water quality focus. Since joining Tetra Tech, she has developed outreach materials for adult and students audiences and is currently an instructor for EPA's *Getting in Step* and *Key EPA Internet Tools for Watershed Management* training courses. Prior to joining Tetra Tech, she was the Executive Director of Capital Region Earth Force. Working with five school districts, she more than quadrupled the Global Rivers Environmental Education Network (GREEN) program reach and successfully orchestrated and delivered 200+ attendee events and week-long training courses for educators.

Abstract

Conducting Effective Stormwater/Nonpoint Source Outreach Campaigns—Is your message being heard? Is it being heard by the people who need to hear it? What makes people respond to environmental messages? The key to successful stormwater or NPS outreach campaigns is targeting your message to specific audiences and getting those audiences to respond to your message. Based on *Getting In Step – A Guide for Conducting Watershed Outreach Campaigns,* this popular workshop will review the basic building blocks for developing effective outreach campaigns through social marketing techniques. A special focus will be placed on the tools needed to identify and research target audiences, developing effective messages that will help achieve your objectives, and developing and distributing the most appropriate formats for your message. The instructors will provide current examples of successful campaigns and numerous examples of outreach materials and activities that others have used successfully to meet stormwater requirements and address nonpoint source issues. Interactive group exercises will get you started developing your own outreach campaign.

Eyes on the Prize

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Biosketches

Rebecca Power is the CSREES Regional Water Liaison to federal and state agencies, nonprofit groups, and businesses working on water quality issues in Minnesota, Wisconsin, Michigan, Illinois, Indiana, and Ohio as a part of the Great Lakes Regional Water Program. She is a water resource specialist at the University of Wisconsin-Extension, and is a member of the multi-state team developing and helping to implement a suite of social indicators in U.S. EPA Region 5 nonpoint source programs. Ms. Power provides evaluation assistance to water resource projects across the Great Lakes Region.

Jennifer Kushner is a Program Development and Evaluation Specialist at the University of Wisconsin-Extension. Located in the Environmental Resources Center, Ms. Kushner works with state, regional, national and international programs related to agriculture and the environment. Her current commitments are primarily related to program development and improvement for the CSREES National Water Program and the Great Lakes Regional Water Program. Through critical systems analysis she identifies non-alignment between stated aims and practice—enabling the development of a cohesive framework that ties together disparate educational programs in ways that are consistent with guiding principles or institutional mission. Ms. Kushner's work includes addressing structural issues, philosophical frameworks, program design, and on the ground implementation.

Dr. Ken Genskow is an Assistant Professor in the Department of Urban and Regional Planning at the University of Wisconsin-Madison and Director of University of Wisconsin-Extension's Basin Education Initiative. His research, teaching and extension work emphasize environmental planning and policy, program evaluation, watershed planning, and collaborative approaches to resource management (http://urpl.wisc.edu/people/genskow/). For the past several years Dr. Genskow has co-led an initiative among six Great Lakes states using "social Indicators" to help plan and evaluate watershed projects throughout the region.

Linda Prokopy is an assistant professor of Natural Resources Planning in the Department of Forestry and Natural Resources at Purdue University. Her research deals with understanding the factors that control an individual's participation and collaboration in land use planning and natural resource management. She co-leads a regional effort to develop a system of social indicators for planning and evaluation of watershed projects. Ms. Prokopy works with watershed groups throughout Indiana and the region to help them implement this system.

Abstract

Morning Session—An Evaluation Primer for NPS and Stormwater Programs. Good evaluation begins at the beginning and always keeps the end in mind. This workshop will lead participants through the process of

program development, with a focus on effective evaluation, use of evaluation information, and impact communication. More specifically, by the end of this workshop, participants will understand how to

- Develop NPS and stormwater outreach programs with an eye on documenting impacts
- Build program evaluation capacity, particularly with a tight budget
- Involve stakeholders in program development and evaluation
- Use evaluation results to improve programs and communicate program impact

The workshop will be interactive and will combine case study examples from across the country with participant work on their own program development questions. It will provide useful information on indicator selection, evaluation with hard-to-reach audiences, and ethical considerations when asking people to share personal information as part of an evaluation.

Afternoon Session—Overview of Social Indicators Evaluation System & Applied Survey Development Skills. Building on the morning session, this workshop will describe the set of social indicators in use by numerous projects in Region 5, as well as an expanded group of indicators that participants might find relevant for their planning and evaluation efforts: the indicators related to awareness, attitudes, constraints, capacity, and behavior of target audiences in NPS management initiatives. This workshop will emphasize the rationale underlying the Region 5 indicators and will engage participants in a discussion of various data collection tools and their application in NPS projects. The second half of this afternoon workshop will focus on survey design and implementation. Participants will engage the instructors and each other in understanding considerations for developing effective survey questions and good questionnaire design, generating high response rates, and analyzing/using survey data for program improvement and reporting.

Onsite Wastewater Education

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Biosketches

Bruce Lesikar serves as Associate Department Head, Professor, and Extension Program leader in the Biological and Agricultural Engineering Department, at the Texas AgriLife Extension Service at the Texas A&M University System. Mr. Lesikar conducts research on and demonstrates the effectiveness of onsite wastewater treatment systems under various site, soil, and water table conditions; evaluates various innovative/alternative onsite wastewater treatment systems; and develops informational resources describing water conservation, treatment, and reuse systems.

David Lindbo is an Associate Professor and Soil Extension Specialist with the Department of Soil Science, North Carolina State University (NCSU). Mr. Lindbo has held his current position with NCSU since 1995 with the majority of that time working in the Coastal Plain of North Carolina on wastewater and soils issues. His main area of interest is in understanding and improving soil and siting criteria for decentralized wastewater systems and other land uses. Mr. Lindbo is one of several key extension specialists and research scientists in the NCSU Onsite Wastewater Program. He directs three of the five onsite wastewater training facilities in NC and offers numerous outreach activities throughout the state annually. The audiences for these activities include homeowners, wastewater professionals, elected officials, nongovermental organizations, and school groups.

George Loomis has been a Research and Extension Soil Scientist in the College of the Environment and Life Sciences (CELS) at the University of Rhode Island (URI) since 1983. Mr. Loomis has conducted research, outreach training and undergraduate teaching in the decentralized wastewater treatment field for the past 24 years. His areas of interest include denitrifying septic systems, alternative and innovative technologies, risk based wastewater management, and soil based wastewater treatment. As Director of the New England Onsite Wastewater Training Center at URI CELS, Mr. Loomis directs decentralized wastewater research and outreach education to a wide variety of onsite wastewater professionals, municipalities, local, state and regional regulatory officials, and homeowner and real estate agent audiences.

Abstract

Research-based Outreach Strategies to Help Minimize NPS Pollution Risks—This workshop will focus on the available network for onsite or decentralized wastewater research and outreach education, the partnerships that help make these efforts possible, and the wealth of existing and developing training curriculum produced by CIDWT. The types of audiences and successful approaches to reaching them, the training products and resources available, how to access these materials, how the training materials support professional credentialing and certification programs across the United States, and capacity building strategies will also be discussed.

Presenter Biosketches and Abstracts

Welcoming Remarks

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Biosketches

Dean Marriott manages the City of Portland agency that provides sewage and stormwater collection and treatment services to accommodate Portland's current and future needs. The Bureau protects the quality of surface and ground waters and conducts activities to plan for and promote healthy Portland watersheds. The sewer and stormwater activities protect public health, water quality and the environment. The Bureau has a staff of 480. Portland has a population of 540,000. The City is located at the confluence of the Willamette and Columbia rivers. Mr. Marriott has been the Director since 1994. Prior to his appointment, he was Commissioner of Environmental Protection for the State of Maine for a period of seven years. Mr. Marriott holds a degree from the University of Delaware and a Law degree from Florida State University.

Dick Pedersen started his job at the helm of Oregon's top green agency in June 2008. Although he is relatively new to director's job, his career in environmental protection has been years in the making. Mr. Pedersen is a scientist—he has a combined degree in biology and chemistry from Carroll College—and a career public servant with more than 30 years experience in both federal and state environmental programs including the Fish and Wildlife Service of the US Department of Interior, Montana's Natural Resource Program, and Oregon DEQ. Mr. Pedersen has worked at DEQ since 1996 in a variety of positions including administrator of the agency's northwest region and land quality division, and deputy director. If you ask him, he'll tell you he's done every job in environmental protection job there is, from taking stream samples, to testing them, to working on basin issues and permitting, to hazardous and solid waste management. When the Environmental Quality Commission, DEQ's governing board, named Mr. Pedersen as the new director this summer, Bill Blosser, who is the chairman, summed up the commission's choice for the new director this way: "Dick has a passion for Oregon, a passion for the environment and a passion for this job. With his depth of experience, demonstrated leadership, and ability to forge collaborative relationships with industry and environmental stakeholders, Dick will invigorate efforts to tackle the state's environmental challenges and carry on Oregon's legacy of environmental stewardship." Mr. Pedersen leads an agency of more than 700 scientists, engineers, technicians, administrators and support staff. As the state's environmental regulatory agency, DEQ protects Oregon's water and air and land quality. The agency's headquarters office in Portland focuses on policy, planning, and enforcement while regional offices work directly with the public and local businesses to regulate pollution sources and promote sustainable practices.

Social Marketing in Tough Times: Show Them the *Pounds per Penny*

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Biosketch

Nancy Lee is an adjunct faculty member at the University of Washington where she teaches social marketing and marketing in the public sector. She has more than 25 years of professional marketing experience including Director of Marketing for Rainier Bank and Marketing Director for Children's Hospital in Seattle. In the past 15 years, as President of Social Marketing Services, she has participated in the development of more than 100 social marketing campaigns to influence behaviors that improve public health, prevent injuries, and protect the environment. Nancy has co-authored five books with Philip Kotler of Northwestern University who first distinguished the social marketing discipline back in the early 1970s. Their most recent book, to be released this summer is titled: *UP and OUT of Poverty: The Social Marketing Solution*. Some are surprised to learn she has several passions in addition to social marketing, including her herb garden, vegetable gardening in 14 big oak wine barrels, four grandchildren, her Minicooper, and her Cocker Spaniel named Happy. Her presentation today, Social Marketing in Tough Times, will emphasize the power of talking Pounds per Penny, in addition to the familiar and critical four Ps of marketing.

Changing Yard Care Behaviors: A Multi-Pronged Education Campaign Addressing Several Target Audiences and Focusing on Measurable Outcomes

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Biosketch

Jennifer Krupowicz has been the Water Quality Educator at Charlotte-Mecklenburg Storm Water Services for the past seven years. Ms. Krupowicz has a bachelor's degree from Virginia Tech in Environmental Sciences and is a certified Environmental Educator through the State of North Carolina. During her tenure at Storm Water Services the water quality education program has been recognized for several national awards including the "President's Award" and "First Place Award" for excellence in communication from the National Association of Flood and Stormwater Management Agencies, the "Meritorious Special Projects Award" from the National Association of County Information Officers, a "Silver ADDY Award" from the American Advertising Federation (Charlotte Chapter) and the "Award for Excellence in Science Reporting by a Broadcast Meteorologist" given to Meteorologist Terri Bennett from the American Meteorological Society for the Water Wise partnership with Charlotte-Mecklenburg Storm Water Services.

Abstract

Nutrients are the third largest pollutant in Charlotte's streams, but more importantly nutrient pollution is also a problem that citizens can have the most effect on changing. The key to selecting a behavior change campaign is to select something that would have a great impact when implemented and also that the behavior change has a pretty good chance of actually occurring.

When implementing a public outreach campaign, the messages should be as close in time and space to the behavior you are trying to modify. The first step to developing a campaign is determining the audience and segmenting the audience into specific initiatives. Only then can you start to set the campaign in close proximity to the behavior. The next step is to determine motivations and barriers to yard care behaviors. Using this approach, Charlotte-Mecklenburg Storm Water Services has developed a two-pronged workshop series. Each series targets a different audience. Post-workshop surveys are utilized to measure knowledge gained during the workshops. Two separate behaviors are monitored as indicators of behavior change. During the two years the workshops series has been implemented, Storm Water Services has been able to measure the knowledge gained by workshop participants and quantify how many participants have actually changed their yard care behaviors based on the knowledge gained.

Falls Hill-Poplar Heights Residential LID Demonstration Project & Conservation Landscaping Incentive Program: Sustainable Stormwater Management at the Community Level

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Biosketch

Christin Jolicoeur has eight years of experience working on watershed awareness and water resources protection projects in the San Francisco Bay Area and the Chesapeake Bay watershed. She received an M.S. in marine sciences from the University of North Carolina – Chapel Hill and interned with the North Carolina Botanical Garden in Chapel Hill. Ms. Jolicoeur currently uses her background in native plants, education, outreach and water resources, as a Watershed Specialist with the Northern Virginia Soil and Water Conservation District, where she focuses on nonpoint source pollution prevention, stewardship programs for adults and youth, community-based restoration and innovative stormwater management.

Abstract

Insufficient stormwater management results in local flooding, drainage concerns for landowners and poor surface water quality. These concerns affect many communities and watersheds, including the Falls Hill and Poplar Heights neighborhoods in the Cameron Run watershed of Fairfax County, Virginia. Acting upon recommendations of a facilitated, consensus-building effort focused on stormwater management concerns, the Northern Virginia Soil & Water Conservation District (NVSWCD) and its partners, Fairfax County and the Northern Virginia Regional Commission, implemented a grant-funded effort to demonstrate and encourage individual property owners to pursue sustainable stormwater management—each at their own home.

A Falls Hills couple volunteered their residential landscape for development as a low impact development classroom. A series of practices, including an infiltration trench, a rain garden, rain barrels, a modified French drain and soil terraces built from compost and biologs were installed at their residence. The process applied to create the demonstration project, including site evaluation, landscape design, site engineering and installation of each practice, formed the basis for a series of residential low impact landscaping workshops for community residents and a companion handbook.

Sixty residents attended the two workshops offered. Attendees received the handbook, which outlined six specific sustainable stormwater practices and provided local resources for their installation. In addition, attendees were offered a series of incentives including: a guided tour of the demonstration project, a free site visit from NVSWCD staff and the opportunity to apply for a grant-funded conservation landscaping matching grant program. The incentives helped to overcome three of the most common barriers to implementation of sustainable stormwater management by residents: lack of exposure to alternatives, lack of technical know-how and funding.

Since the workshop in fall 2008, twenty residents have contacted NVSWCD for individual site analysis and technical assistance, and more contacts are expected in the spring. Five individuals, including the local elementary school, applied for and received matching grants to install rain barrels, enhance riparian buffer, amend soil, reduce lawn, plant native meadow, re-direct downspouts and build compost/biolog terraces.

The cost of this project will be less than $15,000. By soliciting grant funds, applying in-house expertise, recycling available construction materials and soliciting in-kind contributions from private partners and the local landowners, the project was completed at negligible cost.

Rain Barrels as a Stepping Stone to Better Stormwater Management at Home

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Biosketch

Aileen Winquist has over ten years of experience in environmental outreach and communication. Ms. Winquist has a master's degree in environmental science from the University of Virginia, and currently works as an environmental planner with Arlington County, Virginia. Ms. Winquist assists with environmental and watershed programs in the County, including managing the County's volunteer stream monitoring programs, implementing stream restoration projects, and conducting educational workshops and programs on watershed issues. Ms. Winquist was honored in 2003 with Audubon Naturalist Society's "Conservation Award for Public Official", and has presented at the Potomac Watershed Forum, EPA's Non Point Source Education conference, EPA's Community Involvement Conference, and the North American Association of Environmental Educators.

Abstract

Staff from several Northern Virginia jurisdictions and non-profits created a regional rain barrel program to recycle used food storage barrels into low-cost rain barrels for area residents. Clean Virginia Waterways, a local non-profit organization, trained the program partners on how to build rain barrels. The partners worked together to schedule the "make-your-own-rain-barrel" workshops and "pre-made rain barrel" sale events, and advertised the events jointly on flyers and a Web page. The program partners purchased used barrels by the truckload and rain barrel component parts in bulk. In 2007, the first year of the program, the partners distributed approximately 300 rain barrels. The program was expanded in 2008 by using some of the funds from the rain barrel sales to hire a part-time coordinator for the program, resulting in the distribution of over 800 rain barrels. The demand for the rain barrels was very high among residents and each workshop filled prior to the event.

During each workshop, the program partners delivered a presentation with an overview of watersheds, low impact development, and reducing stormwater runoff at home for the workshop participants. Following the 2008 rain barrel workshops, the program organizers e-mailed a follow up survey to approximately 600 workshops participants, and 40% responded to the survey. The survey results showed that 78% of respondents had installed their barrels as of December 2008. Sixty-four percent of respondents purchased one rain barrel and 36% purchased two rain barrels (there was a two-per-household limit because of the high demand for the workshops). The primary motivation for installing a rain barrel was water conservation (85%), followed by having water during dry periods (41%) and reducing runoff (37%). Ninety-one percent of respondents stated they are satisfied with their rain barrel.

In addition, many workshop participants have taken other actions to reduce stormwater runoff, such as installing rain gardens (12%), re-directing downspouts (71%), reducing paved areas or adding permeable pavement (12%). In conclusion, although rain barrels only collect a small percentage of the stormwater runoff from a home, rain barrel programs can be effective in educating residents about water conservation and stormwater issues in general.

Reaching Our Audiences with Outcome-Based Outreach: The Lake Merritt Clean Lake Program

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Biosketch

Dr. Richard Bailey created and has directed the Lake Merritt Institute for eleven years, where he recruits and leads volunteers and Institute members in the battle against urban runoff. Dr. Bailey is a former water quality consultant, project manager in state and federal government, technical director for an industrial company and business owner. Born in Chicago and educated at several schools in the eastern United States, he has always been fascinated by all aspects of water, including its chemistry, recreational potential (including swimming, scuba and fishing) and more recently, its role in climate change, which he tries to teach to his two grown children. He holds a doctorate in forest resources with an emphasis in natural resource management.

Abstract

Lake Merritt is a 140-acre tidal lagoon in downtown Oakland, California. A highly urbanized watershed of seven square miles drains into these public waters through 62 storm drain outlets viewed by tens of thousands of people daily. This "urban runoff on display" in the midst of a wildlife refuge creates concern over water pollution which leads to a dedicated core of volunteers that work to keep it clean. The act of removing trash from public waters is educational, and people who pick up litter and experience runoff first hand become sensitized to the problem.

Coordinated by a non-profit corporation, these volunteers have provided free labor to remove trash from the water for the last eleven years, during which anywhere from 440 – 9,680 pounds of trash per month have been removed from the lake. As part of their service, they receive educational presentations that teach about urban runoff and how to prevent it. These presentations include a series of professionally made and YouTube videos, as well as a comprehensive PowerPoint presentation. Our key messages are two facts that most people still do not realize:

— Storm drains flow to public waters.

— Storm drain flows are not treated.

A monthly newsletter, bulletin boards, Web site and tours of a large storm drain filter are part of the program. Dozens of bulletin board posters have been created and are available for display. Our outcomes are an 11-year, monthly chart of trash removed and a record of the number of people who have participated. Volunteers include individuals, school groups, business organizations and civic associations, most of whom reside in the watershed and many of whom return on a regular basis. The program is sustainable in that schools and individuals provide continuing and renewable assistance. Cleanup events are held five days a week during the rainy season and four days a week during the summer. Four "You-Clean-It" boxes allow individuals to work on their own at any time. Sponsorship of the program is featured in the City of Oakland's water quality permit. The program has won several awards and can be replicated with a modest budget.

Integrating Stormwater Outreach, Public Art, Filtration, LEED Silver Certification, and LID – Yes It Can Be Done!

Mary Morse

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Biosketch

Mary Morse is an Environmental Specialist with the City of San José. She has been planning, implementing, and evaluating watershed, stormwater, wastewater, and pollution prevention outreach and education programs since 1996. Ms. Morse serves on municipal, county-wide, and regional outreach and education working groups tasked with delivering outreach to a wide variety of internal and external audiences. She has been the Watershed Education and Outreach Chair for the Santa Clara Valley Urban Runoff Pollution Prevention Program for the last six years. Ms. Morse graduated *cum laude* from San José State University with a B.S. in environmental studies and a minor in the humanities.

Abstract

The Roosevelt Community Center, located in central San José adjacent to Coyote Creek, incorporates elements of low impact development with a creative, artistic twist. The 30,000-square foot building opened on December 13, 2008 and includes exterior artwork pieces that also treat stormwater via detention, infiltration and bioretention. The first piece, a translucent stormwater filter, collects roof runoff and celebrates the infiltration process, normally underground and invisible, with an 11-foot cobble-filled plexiglass column that serves as a filter, fronted by a steel casing with an etching of the Coyote Creek watershed system. The second piece is comprised of a band of porous asphalt, located in the public sidewalk in front of the building along with an art piece embedded next to it explaining its function and the value of infiltration. The third piece captures roof runoff in a series of artistic scuppers, and directs it to a Japanese-style rock garden in the shape of a large thumbprint, which detains water before it flows overland to nearby swales. Monitoring equipment has been placed in all three pieces to collect data on their function. Education and outreach materials integrated with indoor art pieces foster an awareness and stewardship of Coyote Creek and its watershed. The Center is located in a walkable, pedestrian-oriented urban neighborhood and is served by three bus lines. The Center also includes other smart growth features such as bike parking, and compact parking spaces. The Roosevelt Community Center is a LEED Silver certified Green Building.

Stormwater treatment measures can be integrated in creative, exciting, and fun ways that are aesthetically pleasing and educational. Incorporating artwork in treatment measures, or treatment measures in artwork, can link functional and aesthetic purposes to improve water quality, and create a pleasant, educational public space. This integration of artwork, stormwater treatment, and education was the result of interdisciplinary collaboration between architects, civil engineers, landscape architects, planners, biologists, and artists, all working together from conceptual phases to final construction. By linking the art and stormwater treatment early, the city was able to leverage funding from its capital program bonds, art programming, and the storm sewer utility resulting in more unique, innovative, and educational treatment measures.

Outreach Portland Style: Promoting Green Development

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Biosketch

Jan Seago was hired in 2001 by Washington State University as a Regional Environmental Education program coordinator with the USDA-CSREES Region 10 Water Program. Presently, she works with the same team but has transitioned to the University of Idaho as the Liaison to EPA. The position was created to develop regional workshops and trainings with Cooperative Extension agents, watershed groups, conservation districts and agency professionals. Annual workshops in conjunction with agriculture and natural resource conferences were developed. One day-long workshop, Suburban Salmon, was offered in several locations along the I-5 corridor through Oregon and Southwest Washington. In 2002, the Region 10 Water Program distributed a four-state survey to gauge citizen knowledge and attitude about water issues. From that survey, they found people preferred their information to be televised. Ms. Seago used this fact to begin offering workshops by satellite and video stream transmission. Working with the Washington State University Video Specialists, seven, two and one-half hour award winning Watershed Issues programs have aired by satellite and video stream. The workshops are planned around viewers' preferences on pressing water resource issues. The broadcasts are marketed through e-mail contacts, natural resource agencies, and university partnerships. After broadcasting, the workshops are archived at http://eces.wsu.edu/video/StormwaterMgmt.html and DVDs are available for the public through http://pubs.wsu.edu/cgi-bin/pubs.

Abstract

Portland, Oregon has a long history of active neighborhood associations. The city's Bureau of Environmental Services has utilized these associations as basis for outreach to the public about funding or partnership opportunities to install rain gardens, curb extensions, and other low impact development strategies to slow the rush of stormwater to the Willamette River.

Portland has an interesting array of stormwater management strategies that will be looked at in this presentation. Public art and gardens hide the engineered design. The city offers maps for self-guided and docent-led bike and hike tours of stormwater management strategies around the city.

As a corollary of the city's outreach, the Hosford-Abernathy neighborhood, on the southeast side of the Willamette has facilitated the city's message by spreading the word to community businesses and churches about the partnership opportunities, low-cost loans, and grants available from the Bureau of Environmental Services. This presentation will document an array of outreach activities that renders Portland's stormwater management unique in the United States.

The City of Portland and ProjectDX—Animating Local, Private, Green Stormwater Action

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Biosketches

Tom Puttman is a sustainability engineer and planner with over a decade of experience visioning, planning and designing some of the most innovative stormwater projects in the United States. From projects ranging from 1 to 300,000 acres, Mr. Puttman has considerable experience in sustainable stormwater management master planning, design, economic analysis, and regulatory compliance. He has provided expert guidance to regulatory authorities including the U.S. EPA, State of Oregon, and City of Portland regarding sustainable stormwater management, rainwater harvesting, wastewater treatment and reuse, and water rights. Mr. Puttman has worked with the U.S. Green Building Council to develop its LEED rating system and has provided engineering support to over 25 LEED projects ranging from certified to platinum. Nominated by City Council, he is also a current member of the City of Portland's Stormwater Advisory Committee. Mr. Puttman holds a B.S. in civil engineering with a concentration in environmental engineering and water resources engineering and a M.S. in city and regional planning. He is also a LEED-accredited professional.

Dan Vizzini has been employed by the Portland Bureau of Environmental Services since July 1997, with primary responsibilities involving financial, legislative, intergovernmental and public policy matters. He is the Bureau's project manager for the Stormwater Marketplace Project, liaison to the Willamette Partnership ecosystem credit trading initiative, and liaison to the Portland Small Business Advisory Council. From May 1998 through January 2008, Mr. Vizzini served as a member (and frequent chairman) of the Planning Commission for Lake Oswego, Oregon. He was born and raised in New Jersey. Mr. Vizzini earned a B.A. in economics from Boston University in 1976, and moved to Oregon with his wife in 1979.

Abstract

Reversing the accumulated damage of urban development requires levels of stormwater management and habitat restoration that far exceed the capacity of most municipalities. Achieving real and sustainable watershed health will require stormwater management strategies that address runoff at its source, mimic natural functions, are integrated into the built environment, and achieve multiple benefits. In other words, effective stormwater management must be predominantly local, private, and green.

Public actions (regulation, utility investments) are neither sufficient nor sustainable at levels required to reverse the accumulated degradation. Despite significant popular support for clean rivers and healthy watersheds, ratepayers resist the imposition of new utility charges and the subsequent rate increases required to finance even the most basic restoration and mitigation efforts. Something more is required to achieve sustainable watershed health. Real and sustained change is possible when personal values find expression in personal behaviors and investment decisions. Self-perpetuating change can be achieved once progressive behaviors are reinforced and multiplied by community recognition and the enabling activities of private markets.

But how might communities develop effective ways to increase stormwater management without the need for increased regulations? One promising approach is to use information technologies, the Internet, social marketing strategies, and incentives to animate private action to control stormwater runoff. Information technologies and the Internet have obviously already proven their usefulness in creating new markets in others areas and efficiently connecting consumers to desired goods and services.

The City of Portland is currently working to employ these technologies in the service of a stormwater marketplace to drive voluntary stormwater management actions. The goal is to develop and deploy an Internet-based service to link property owners to City stormwater goals, techniques and standards, as well as a local green marketplace. ProjectDX is an online infrastructure decision support tool for setting goals, driving behavioral changes, evaluating process, and lowering city infrastructure costs. ProjectDX will promote measurable change by showing users their current impact on the environment and allowing them to explore options for minimizing their impact while saving money and helping their community.

ProjectDX intends to transform the traditional approach of delivering municipal services and programs to the community. The boundaries of public and private action may begin to blur as shared facilities, partnerships, and private action complement and multiply direct municipal investments in stormwater facilities and services.

Greening the Grass: Encouraging Mainers to Adopt Low Impact Lawn Care Practices

Jami Fitch

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Biosketch

Jami Fitch has been a project manager at Cumberland County Soil and Water Conservation District in Windham (CCSWCD), Maine since 2004. Ms. Fitch is responsible for implementing a number of watershed protection projects at CCSWCD where she works with private landowners, municipalities, watershed groups, and government agencies to address nonpoint source pollution impacting watersheds throughout Southern Maine. Ms. Fitch coordinates CCSWCD's YardScaping program, which encourages Southern Maine residents to maintain their lawns for the health of kids, pets, and the environment. She has a bachelor's degree in environmental science with a concentration in marine ecology from Boston University and has also studied environmental science and policy at the Biosphere 2 Center in Oracle, Arizona and marine biology at the Marine Biological Laboratory in Woods Hole, Massachusetts. Prior to her work at the District, Ms. Fitch worked as an educator for the New England Aquarium in Boston, Massachusetts and for the Marine Resources Aquarium in Boothbay Harbor, Maine.

Abstract

The Cumberland County Soil and Water Conservation District (CCSWCD) has been working with 14 southern Maine municipalities to implement a social marketing program to achieve behavior change regarding lawn care practices. Between 1995 and 2001, the number of lawn care companies in Maine tripled, and the amount of distributed yard care pesticides doubled to 1.8 million pounds. In addition, water quality monitoring data showed measurable pesticide levels in Casco Bay. The Casco Bay Watershed encompasses all or part of 41 cities and towns, and houses more than 25 percent of Maine's population on only 3 percent of the land area.

In 2005, CCSWCD developed a 3-year education plan to promote low impact lawn care. The plan included a phone survey to identify the target audience, the message that would resonate with the audience, and methods for delivering the message. In 2006, CCSWCD adopted the state YardScaping program, which promotes utilizing low impact techniques to maintain all areas of the yard. CCSWCD tailored the program to focus specifically on lawn care (turf management), and materials were crafted and outreach methods were piloted. Consistent branding has been an important part of this successful program. A rubber ducky logo is used on all YardScaping outreach and promotional materials. In a series of focus groups sponsored by the Maine Department of Environmental Protection, participants recalled a television advertisement where stormwater pollution was depicted as rubber duckies. The marketing specialist who convened the focus groups highlighted the ducky as a brand that should be used to promote all stormwater education efforts, including lawn care.

The survey and focus groups identified that Maine citizens look for information about what they should put on their lawns at the point of sale. Research also indicated that the timing of messages is important, since lawn care is not a topic that is frequently considered outside of the moments when lawn care decisions are being made or activities undertaken. A lawn care point-of-sale program was developed to address this need.

In addition, CCSWCD recognized that in order for lawn care education to truly be successful, the message needed to be made available in a number of different formats in a variety of venues. Therefore, a multi-dimensional program was developed that had the following components:

- YardScaping materials that utilized the ducky logo
- Press releases, feature articles, and newsletter articles
- Displays for municipal offices and community events
- Web site
- Community education (adult education, point-of-sale program, and trainings for professionals and municipal staff)

This presentation will outline the piloted efforts including: adult education classes, booths at various events, neighborhood canvassing, presentations to community groups, and the point-of-sale program. The presentation will also highlight documented behavior change, the pros and cons of each type of outreach, tracking methods, lessons learned, and how materials and methods have been refined based on feedback.

Watershed Watch – Lessons Learned from Seven Years of Implementation

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Biosketches

Mary Morse is an environmental specialist with the City of San José. She has been planning, implementing, and evaluating watershed, stormwater, wastewater, and pollution prevention outreach and education programs since 1996. Ms. Morse serves on municipal, county-wide, and regional outreach and education working groups tasked with delivering outreach to a wide variety of internal and external audiences. She has been the Watershed Education and Outreach Chair for the Santa Clara Valley Urban Runoff Pollution Prevention Program for the last six years. Ms. Morse graduated *cum laude* from San José State University with a B.S. in environmental studies and a minor in the humanities.

Sandi Manor is the marketing consultant for the Santa Clara Valley Urban Runoff Pollution Prevention Program. An agency principal since 2000, Mr. Manor is the owner and President of AdManor, Inc., a full-service communications corporation with a focus in environmental public education campaigns for coalitions, public agencies and private organizations. Her experience with community-based social marketing for sustainability issues includes energy and water conservation, sustainable energy development, recycling and waste reduction, and pollution prevention. Ms. Manor is a graduate of San José State University's accredited advertising program, a 20-year veteran of media and marketing, and a lifelong student of messages and consumer behavior.

Abstract

The Santa Clara Valley is home to more than 1.7 million people and 350 square miles of urban, suburban, and rural landscape. It also has the oldest Phase I Stormwater National Pollutant Discharge Elimination System (NPDES) permit in the country. Since 1990, outreach and education have been important components of both our permit and our pollution prevention strategy. In 1999, the Santa Clara Valley Urban Runoff Pollution Prevention Program began to coalesce all of its outreach efforts into one project: the Watershed Watch campaign.

Watershed Watch is a multi-year, multi-faceted outreach and education campaign designed to increase awareness of watershed issues, change behaviors which negatively impact the watershed, and increase appreciation for our creeks and the South San Francisco Bay. The campaign took two years to plan and launched in 2001. So what can seven years of implementation in a large and complex setting teach us? How has working with and meeting the needs of fifteen different agencies shaped the campaign? How have shifting demographics and priorities in our audiences impacted the campaign? How have we evaluated our progress, and used our findings to change the campaign? This presentation will answer these questions and more.

Scoping Workshops and Focus Groups Ensure Successful Outreach Programs: Case Studies from Oregon

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Biosketch

Derek Godwin is a watershed management specialist for Oregon State University (OSU) Extension Service and Oregon Sea Grant. He has been working with a team of extension faculty in developing and delivering new education programs on low impact development. Mr. Godwin has a bachelor's degree in forest management, a master's degree in bioresource engineering, and specializes in hydrology, urban land use impacts on stormwater and water quality, and stream processes. He has been an extension faculty member for 15 years and is currently working in the Marion County office in Salem, Oregon.

Co-presenters from OSU Extension Service and Oregon Sea Grant include Robert Emanuel, Water Resources and Community Development, North Coast; Sam Chan, Aquatic Invasive Species and Watershed Health on campus at OSU; Frank Burris, Watershed Management, South Coast; and Megan Kleibacker, Watershed Education Outreach Program Coordinator on campus at OSU.

Abstract

Numerous stormwater and water quality outreach programs utilize a "build it and they will come" method for planning and providing outreach and ultimately fail to meet the target audience or provide the necessary information and education to meet expected outcomes. These programs may even include high quality, research-based materials that have been successful in other areas and succeed in having a large number of people attend the first program, but they miss their target audience, receive poor evaluations, do not maintain momentum in future programs, or do not have the ultimate impact expected.

After some successes and failures in delivering an education and technical assistance program in small coastal communities in Oregon, we conducted an extensive needs assessment in three different size communities (phase 1, phase 2 and smaller). We utilized a scoping workshop approach to gather information, create partnerships and help plan a new low impact development education program. This experience yielded far more results than anticipated, and we have used these results and planning methods to launch a variety of stormwater education programs in many different communities.

This presentation will share successes in delivering low impact development scoping workshops and utilizing focus groups and advisory committees to reach a variety of audiences in both urban and rural areas in Oregon. We will provide specific examples for designing and facilitating these events to maximize their effectiveness in planning and evaluating outreach programs.

We will also share how information from these meetings has yielded a variety of scholarly products and opportunities, grants for funding new projects, research projects and the creation of new partnerships.

Pilot-Testing Performance-Based Incentives for Agricultural Pollution Control in Iowa and Vermont

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Biosketch

William Matthews is the manager of the Oregon Department of Agriculture (ODA), Confined Animal Feeding Operation (CAFO) program. The CAFO Program has about 575 farms registered to the CAFO Permit and the program is 100% compliance-oriented for surface and ground water protection or Oregon's water resources. Mr. Matthews has worked at ODA for more than 6 years. Prior to his ODA employment, he worked as a nutrient management specialist with conservation districts in Washington from 1992 to 2002. He also operates a small hay, small grain and vegetable farm near Sheridan, Oregon.

Abstract

Current programs for controlling nonpoint source (NPS) pollution in the United States are focused on cost-sharing best management practices and compensating farmers for idling selected tracks of working land. While these programs have been important and valuable tools for reducing agricultural pollution, they often do not encourage farmers to utilize the most cost effective actions nor create innovative new solutions for their farming operations. This Conservation Innovation Grants (CIG) project is pilot-testing the use of performance-based incentives for reducing NPS pollution from agriculture intensive and important agricultural areas—the Upper Mississippi River Basin and the Lake Champlain Basin. Performance-based incentives reward farmers for achieving specified environmental performance at the farm-level; the payments are not tied to any specific practice(s). As such, farmers have the flexibility and incentive to seek out and use the least costly way(s) to achieve the specified environmental outcome.

Preliminary results show that an annual incentive payment of $10/lb phosphorus (P) loss reduced, as estimated with the Iowa P Index, can result in an average P loss reduction of 0.88lbs/acre/year. The cost of these changes to the participating producers is estimated at $-0.61/lb/year (a savings) and a resulting profit of $10.61/lb/year. In Vermont, a $25 incentive payment results in an average P reduction of 0.26lbs/acre/year (using the Vermont P Index) for a cost of $4.86/lb and a resulting profit to the farm of $20.14/lb. This work has also stimulated some innovative and commonsense management changes for reducing P loss. The most important lessons learned from the project so far are that (1) the cost-effectiveness of various actions to reduce NPS pollution vary greatly from farm to farm and field to field, with no one action showing consistent advantages; and (2) performance measures and incentive payments need to be watershed specific, taking into account local water quality issues, farm systems, geophysical conditions, and budget constraints.

The Clean Water Word: Why Your Stakeholders Are Your Best Marketers

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Biosketch

Ely Teragli is the public information specialist for Clean Water Services, the water resource management utility in Washington County, Oregon. Ms. Teragli has worked at Clean Water Services for over three years, managing outreach programs, creating electronic and traditional newsletter content, staffing community events and teaching adults and students alike the importance of keeping the Tualatin River Watershed clean. She graduated from Pacific University in Forest Grove, Oregon with a degree in media and communications. Ms. Teragli previously worked at the Oregon Zoo and Young Audiences of Oregon in public relations and marketing before landing in the fascinating and fantastic field of stormwater and wastewater.

Abstract

Most people want to do the right thing to protect water quality, but not necessarily to save fish habitat. Residents are immediately interested in the health of their family, friends and neighbors. So who better to prompt your audience to change their behavior than people just like them? This presentation will follow two outreach programs that rely on residents (ok, and their dogs) to promote watershed stewardship. This presentation will begin with the Behavior Survey, conducted in 2002:

- Why we conducted it
- What we measured
- What we found

This presentation will also describe the Canines for Clean Water and Clean Water Hero programs:

- How they evolved
- Results from outreach
- Media used to promote them
- Partnerships and expansion
- How they are/will be measured

People like to celebrate success and they also enjoy a story. These model citizens are more than happy to help "preach the clean water gospel" and they can be a great, inexpensive way to spread your message. Instead of simply instructing folks to "do this, it's good for the river and fish," celebrate your stakeholders who've already done great things for water quality and use them as an example for others to follow.

Forming, Storming and Norming: The Creation of STORM (STormwater Outreach for Regional Municipalities)

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Biosketches

Dave Ward is the Principal Watershed Steward and Stewardship Program Lead with Snohomish County Public Works, Surface Water Management Division of Snohomish County, Washington Mr. Ward has over 20 years of supervisory and project management experience, 16 years of public education and outreach experience, and eight years of experience in targeted outreach, communication development, program evaluation, and social marketing. This work emphasizes programs and strategies to help landowners improve water quality and aquatic habitat. Mr. Ward has degrees in civil engineering and architecture.

Doug Rice is the Public Outreach Lead and Natural Yard Care Neighborhoods Manager for King County Department of Natural Resources and Parks, Stormwater Services Branch in King County, Washington. Mr. Rice has 15 years experience in advertising and marketing and 18 years experience in outreach/ education. He created the Bert the Salmon campaign and developed the Natural Yard Care Neighborhoods concept and program—an award winning social marketing program. Mr. Rice has in-depth experience with program development, implementation, and evaluation and cross jurisdictional partnerships.

Abstract

Question: How does an individual jurisdiction with almost no budget, address stormwater permit compliance when the object of greatest concern is Puget Sound, which is surrounded by 11 counties and hundreds of smaller jurisdictions…and do it quickly?

Answer: You open the floodgates, allow equal participation from the whole watershed, pool resources and organize like hell. You also plan strategically, work towards synergies with partners, and democratically involve the talent, intelligence and willingness of hundreds of staff and stakeholders. The result can be a powerful engine for forging alliances, building inspiring messages, inspiring behavior change in a population of millions, raising the bar for outreach and, hopefully, saving Puget Sound from the ever increasing impacts of pollution.

With the inclusion of Phase II jurisdictions in the new National Pollutant Discharge Elimination System (NPDES) permit requirements in 2007, the mandate for both Phase I and II to work together made sense, as many Phase I's had done a host of earlier work. Meeting permit requirements is daunting, particularly for small jurisdictions with maybe one person to handle all aspects of stormwater compliance. Obviously, working as a consortium we would all have better access to a wider range of human and information resources, could benefit from others' experience to develop new and innovative solutions, and benefit from strength in numbers.

Within a month of the issuance of the new permit we began a process that ultimately:

1. Formed a consortium to organize, plan and implement our shared NPDES permit outreach requirements
2. Found grant funds to create a bold, strongly branded campaign that integrates with and enhances related campaigns as well as local programs

3. Maximized local education program capacities through social marketing techniques and by linking action plans to marketing effectiveness measurement

The ultimate result has been a cost-effective and interactive social tool that promises to transform public awareness and change behaviors impacting water quality in the Puget basin. The surprise is the speed at which all this has occurred. There have been two drivers for this: permit compliance according to our stormwater management program schedules and the winning of a $960,000 Washington State Department of Ecology grant that must be used within three years.

From its inception, one of STORM's central missions and a stated grant deliverable, is to share its solutions and messages, successes and formulas with as many jurisdictions as would find it of benefit. This presentation is about those elements, how we got there and where we're going.

Northern Virginia Clean Water Partners Use Radio to Influence Resident Behavior

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Biosketch

Aileen Winquist has over ten years of experience in environmental outreach and communication. Ms. Winquist has a master's degree in environmental science from the University of Virginia, and currently works as an environmental planner with Arlington County, Virginia. Ms. Winquist assists with environmental and watershed programs in the County, including managing the County's volunteer stream monitoring programs, implementing stream restoration projects, and conducting educational workshops and programs on watershed issues. Ms. Winquist was honored in 2003 with Audubon Naturalist Society's "Conservation Award for Public Official", and has presented at the Potomac Watershed Forum, EPA's Non Point Source Education conference, EPA's Community Involvement Conference, and the North American Association of Environmental Educators.

Abstract

The Regional Stormwater Education Campaign was initiated in 2003 to assist localities in Northern Virginia in leveraging funds to achieve common goals regarding stormwater education and outreach and to promote consistent messages for fertilizer and pesticide use, pet waste disposal, and motor oil recycling. The campaign satisfies MS4 (municipal separate storm sewer system) Phase I and Phase II permit requirements for stormwater education and documenting changes in behavior. Currently there are 14 partner jurisdictions and utilities and a regional organization that helps coordinate the program.

The radio ad ran 1,064 times on eight local radio stations, including one Spanish language station in April and May, 2008. A statistically designed phone survey conducted before and after the campaign, measures the effectiveness of the ad. Residents in Northern Virginia expressed similar levels of concern about water pollution as the 2007 survey, with 96 percent of residents surveyed stating that the role of individuals in maintaining water quality is "very" or "somewhat" important. The number stating the role of individuals in maintaining water quality is "very important" has increased 16 percent since 2006. Approximately 77 percent of residents were aware that stormwater flows directly to streams, and not to a wastewater treatment plant, which is consistent with the 2007 results and up from 69 percent in 2006. However, a new question added in 2008 shows that 55 percent of the respondents were unaware that they live in the Potomac River watershed.

Among residents who heard the ad (48 percent of the sample), 15 percent said they were more careful with fertilizer and 11 percent said they picked up after their pet more after hearing the ad. Eighty-one percent of people hearing the ad said they thought it would be effective in changing behavior. Consistent with the 2007 survey, one in three residents stated that they fertilize their lawn. However, less than a quarter of the respondents have ever tested their soil prior to applying fertilizer.

Thirty-five percent of Northern Virginians pick up after their pets. Of those that do not, the majority do not think that picking up after their pet is important, or do not like to pick it up. The vast majority of Northern Virginia residents that change their own motor oil take it to a gas station or local HazMat facility for recycling. Those that store it or dump it find it inconvenient to recycle used motor oil or do not know where to take it for recycling.

The campaign Web site developed in 2007 was expanded for the 2008 campaign (www.onlyrain.org). The Web site includes information about the campaign, the campaign partners, pollution prevention tips, campaign print materials, the radio ads, and two video PSAs. Between April 7 and May 19, 2008 over 500 individuals visited www.onlyrain.org, staying an average of four minutes on the site. The most popular page shares personal stewardship information.

Spend Less, Teach More: A Model for Collaborative Stormwater Outreach and Education

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Biosketch

Angie Hong is the educator for the East Metro Water Resource Education Program, a stormwater education program in Minnesota hosted by the Washington Conservation District with 17 city, county and watershed organization partners. She holds an M.S. in natural resources science and management with an emphasis on environmental education (University of Minnesota, Twin Cities, 2004) and a B.S. in zoology (University of Wisconsin, Madison, 2000). Prior to this position, Ms. Hong worked as a naturalist in the Twin Cities area. In her free time, she leads outings for the North Star Chapter of the Sierra Club and competes in triathlons.

Abstract

Phase II of the National Pollutant Discharge Elimination System (NPDES) Stormwater Program requires municipal separate storm sewer (MS4) entities such as cities, watersheds and counties to conduct stormwater outreach and education. This can be challenging, as financial and staff resources are limited. As a result, the quality of outreach programs can vary widely within a region and local education efforts are often duplicative and uncoordinated.

The East Metro Watershed Education Program (EMWREP) is a unique watershed-county-city partnership formed to conduct water resource education in the Minneapolis-St. Paul metro area. The partnership began in 2006 with seven local partners, and has grown to 17 partners in 2009. EMWREP program partners make an annual contribution to fund a shared water resource educator who is hosted by the Washington Conservation District. Contribution levels vary based on the size of the entities.

The benefit of a shared educator is two-fold. First, and most obvious, each partner organization is able to conduct watershed education without hiring a full-time employee. This is ideal for the smaller cities and watersheds and those with limited staff. Second, by having a shared educator for the entire east metro area, the partners are able to minimize overlap and maximize their impact. For example, the educator can write one article that can be distributed in the newsletters of all 28 cities and townships in the EMWREP region.

The EMWREP education plan was designed to help partner entities meet all six minimum control measures for their MS4 permits. In addition to conducting public outreach and education, EMWREP has also hosted several trainings for city and watershed staff, including engineers, planners and public works employees, and has worked with the NEMO (Nonpoint Education for Municipal Officials) program to educate local decision makers.

This presentation will describe how the East Metro Water Resource Education Program was developed and share highlights and examples from the first three years of the program.

All About NEMO: A Proven Model for Educating Communities on Stormwater

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Biosketches

Dave Dickson serves as the National NEMO Network Coordinator at University of Connecticut Center for Land Use Education and Research. Mr. Dickson provides training opportunities, communication services, and coordination for the 33 NEMO programs across the nation. He has been with University of Connecticut since 2004.

John Rozum has been the Connecticut NEMO Program Director since 2003, and prior to that served as the first coordinator of the National NEMO Network. Mr. Rozum is an AICP planner, and in addition to his outreach work teaches urban and regional planning at University of Connecticut.

Abstract

The Nonpoint Education for Municipal Officials (NEMO) Program was created in 1991 at the University of Connecticut, as a partnership between USDA Cooperative Extension, National Oceanic and Atmospheric Administration Sea Grant Extension, and the Department of Natural Resources and the Environment. NEMO was a pioneer in its tight focus on local land use decision makers as a target audience, in its land use planning approach to stormwater issues, and in the use of geospatial technology for outreach purposes. Eighteen years later, the Connecticut NEMO Program is still going strong, and has a documented record of assisting communities in making changes to their land use plans, regulations, and development practices to better protect water and other natural resources. In addition, for the past 10 years CT NEMO has been the leader and coordinator of the National NEMO Network, a group of 32 programs in 31 states that is assisting communities across the country.

This session is an adapted version of the "scoping" workshop originally developed for colleagues in other states exploring the feasibility of starting a NEMO program of their own. NEMO principals will describe their philosophy of working with local officials; go over nuts-and-bolts educational methodologies and technical tools; and review lessons learned, outcomes and challenges. They will also provide an overview of the NEMO Network, and some of the innovative outreach methods and impressive outcomes of programs from around the country. This workshop is designed to be relevant to those working with, or interested in working with, land use officials as a primary target audience, and is not restricted only to those interested in starting a NEMO program.

Blue Thumb—Planting for Clean Water: Using Social Marketing Techniques to Promote Native Gardens, Rain Gardens and Shoreline Plantings within Priority Watershed Areas

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Biosketch

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Abstract

The Blue Thumb—Planting for Clean Water Program uses community-based social marketing strategies to engage the general public in creating native gardens, rain gardens and shoreline plantings to prevent nonpoint source pollution. The East Metro Water Resource Education Program (EMWREP) is using Blue Thumb neighborhood parties to begin changing social norms in the Minneapolis-St. Paul metro area and as a strategy to promote best management practice implementation within targeted sub-watersheds and neighborhoods. Paired with financial incentives and the resources available through the Blue Thumb program, these parties have successfully engaged multiple households within neighborhoods to install native gardens, rain gardens and shoreline plantings.

Lake Clarity Crediting Program for Lake Tahoe

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Biosketch

Jeremy Sokulsky has pursued innovative means to improve the environment for over a decade from the public, private and non-profit sectors. In 2004 Mr. Sokulsky founded Environmental Incentives to investigate and further the use of incentives and performance-based policies as tools to inspire environmental improvement. He is leading the development of the Lake Tahoe Lake Clarity Crediting Program and that will be used to plan the investment of public funds to improve water quality and judge stormwater NPDES permit compliance, and enable water quality trading between municipalities. He recently completed the design of a multi-agency management system that will serve as the decision, information flow and reporting framework for the large monitoring and restoration programs in the Lake Tahoe Basin. Environmental Incentives is helping clients to implement the management system for several restoration and reporting programs.

Mr. Sokulsky has evaluated environmental markets including an analysis of water quality trading programs in the United States, wetland mitigation banking, and public and private payment programs for watershed ecosystem services in Latin America and Australia. His overall goal is to assemble the policy, scientific and operational infrastructure to enable ecosystem service-based policies and incentive programs as tools to inspire environmental improvement. Mr. Sokulsky is a certified professional engineer in civil engineering. He earned a B.S. in chemical engineering from the University of California, Berkeley and an MBA from the Stanford Graduate School of Business.

Abstract

The Lake Tahoe Lake Clarity Crediting Program (LCCP) provides the framework to quantify, track and report the water quality benefit from pollutant load reduction actions. The LCCP quantifies progress towards regaining Lake Tahoe's historic clarity through the reduction of fine sediment and nutrients. The credits are used to define TMDL milestones, National Pollutant Discharge Elimination System (NPDES) permit requirements and capital improvement programs to incentivize the most effective projects and actions.

Redevelopment of underutilized commercial areas with significant impervious coverage is a potential means to reduce pollutant loading. Credits and agreed-upon credit estimation tools provide a consistent means to quantify the benefit or impact of redevelopment, which assists with project reviews and stakeholder communications.

The LCCP defines a set of processes and methods to evaluate and communicate benefits from capital projects, road and right-of-way maintenance practices, and ordinances. Standardized models, rapid assessment methodologies and an accounting and tracking system comprise the standardized tools to consistently estimate and track load reductions and credits. Credits are awarded each year based on ongoing inspections, operations and maintenance performed to ensure the processes are performing within the expected range of effectiveness.

Communication between municipal implementers, state and federal grantors, and regulators is driven by annual reports that declare the amount of credit earned. The credits can be scaled down to provide an information incentive to encourage implementation of private property BMPs.

For nonpoint source pollutant load reductions, a well-defined crediting program such as the LCCP can:

- Identify and evaluate project opportunities for prioritization
- Incentivize ongoing performance of effective actions
- Track and report the sum of benefits across many actions implemented as part of a larger municipal or regional program
- Account for pollutant reduction with respect to TMDL milestones and NPDES permit compliance
- Support water quality trading or offsets

The LCCP provides a transparent and consistent means to communicate benefits for public and private investments to reduce stormwater pollution. This is particularly important during times of tight budgets to ensure that moneys are effectively and efficiently used.

RiverSmart Homes: Promoting Stormwater Management on Residential Properties

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Biosketch

Shelby Laubhan is an Environmental Protection Specialist working for the District of Columbia Department of the Environment (DDOE), Watershed Protection Division. Her primary work involves promoting environmental education initiatives in District schools and marketing environmental stewardship practices—such as stormwater management initiatives—to District residents. Ms. Laubhan, a native to the ChicagoLand region, holds a BA in environmental communications—a self-designed major from Beloit College. She worked for three years at the Chesapeake Bay Program, first as a U.S. EPA Fellow and then as a National Oceanic and Atmospheric Adimistration Education Specialist. These positions concentrated on the development of environmental education policy and regional watershed education programming and funding. In addition to her governmental work, Ms. Laubhan has been on the Executive Committee of the non-profit DC Environmental Education Consortium for four years, is a vetted outdoor environmental educator, and is anticipating a community supported agriculture organic farm internship this coming summer and a 2010 Peace Corps assignment in rural Central Asia.

Abstract

The District Department of the Environment's *RiverSmart Homes* program offers homeowners the opportunity to improve local water quality at little cost. *RiverSmart Homes* curbs stormwater runoff with: the installation of rain barrels and rain gardens, the planting of large shade trees, the removal of impervious areas and replacement of pervious surfaces, and the institution of BayScaping and integrated pest management programs.

RiverSmart Homes is different from past programs that have met with mixed results, as it is a conservation education program that involves social marketing to encourage residents to adopt specific behaviors and to understand the effects of their behaviors on local waterways. The social marketing tactics that have been used for the program, to date, include:

- Surveys
- Focus Groups
- Demonstration Sites
- Public Events
- Outreach
- Workshops
- Property Audits

Social marketing tactics that are currently being considered and developed include:

- Web-based Tracking Interface
- Electronic/Paper Newsletters
- Local Newspaper Column/Features

— RiverSmart Homes "Block Captain"

— "RiverSmart Homes Club"

Because residential development is the single largest land use in the District—and these lands are a major source of water pollution—one of the greatest needs and the greatest challenges is helping individual households change their behavior through programs such as *RiverSmart Homes*. Persuading homeowners to adopt pollution prevention techniques on their properties will go a long way toward achieving the District's water pollution reduction goals.

Stormwater Management in Your Backyard: An Extension Education Initiative

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Biosketch

Dr. Christopher Obropta, Ph.D., is the Extension Specialist in Water Resources with Rutgers Cooperative Extension, and he is an Associate Professor with the Department of Environmental Sciences at Rutgers University. Dr. Obropta has a doctorate in Civil Engineering from Stevens Institute of Technology, a MS in civil engineering from New Jersey Institute of Technology, and a BS in civil engineering from New Jersey Institute of Technology. Prior to joining Rutgers, Dr. Obropta was an environmental consultant for 12 years at Omni Environmental Corporation. Dr. Obropta has a background in watershed management, water quality modeling, hydrologic and hydraulic modeling, and coastal engineering. His specific experience includes watershed restoration, onsite wastewater treatment system design and management, wasteload allocations and TMDL studies, stormwater management, wetland design, effluent dilution analyses, longshore sediment transport, computer-aided design, and geographic information systems. He teaches Bioresource Engineering Design I & II, where he directs student design teams to develop solutions to complex real-life engineering problems.

Abstract

This 2007 National Integrated Water Quality project targets Gloucester County, New Jersey; Ulster County, New York; and Fredrick County, Virginia. The groundwater resources in these counties are experiencing pressure due to increasing suburbanization. The objectives of the project are to educate residential and farm property owners about the use of rain gardens as a stormwater management tool and facilitate the adoption of this practice. The project is modeled after a successful rain garden education program in Union County, New Jersey.

A survey of Union County participants indicated that some residential property owners would need the services of a landscape professional to install a rain garden. During year one of the project, 90 New Jersey landscape professionals and Union County vocational technical school horticulture students participated in a pilot rain garden installation training program. The training included classroom instruction and installation of two community rain garden demonstration sites. During year two of the project, the professional landscaper training program will be offered in all three states.

Rain garden education programs for Master Gardeners, Master Naturalists, and residents were started in Ulster County, New York and Frederick County, Virginia. Using their training, the volunteers installed demonstration rain gardens at the Ulster Municipal Building in New York and Hedgebrook Farm in Winchester, Virginia. Pre and post tests were utilized to measure the knowledge gained by 34 participants. The average scores increased from 46% to 91%. Questions participants improved on were rain garden site selection, proper depth, fertilization practices and maintenance. In year two of the project, the trained volunteers will be offering educational programs at the new demonstration sites for the general public.

The outputs, outcomes, partnerships, leveraged resources, and lessons learned are listed below.

- Four community demonstration rain garden sites were planted by 124 participants.
- The Gloucester County Fair Association; Union County, New Jersey public works department; and the municipality of Ulster, New York public works department provided in-kind support.

— Training programs for professional landscapers were offered in Northern and Southern New Jersey. The programs were promoted by the New Jersey Landscape and Nursery Association, New Jersey Farm Bureau and the New Jersey Landscape Professionals Alliance.

— The rain garden installation program at Hedgebrook Farm occurred during an "Open House" day and was featured in articles in the "Winchester Star" and "Lancaster Farmer."

— Partnerships were created with Land Grant partners and stakeholder groups in the Virgin Islands and Puerto Rico to expand the *Stormwater Management in Your Backyard* initiative.

Changing Public Behavior: Addressing the Challenges of Applying Social Assessment to Water Management Strategies

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Biosketches

Elaine Andrews (M.S., MAT) is the Director of the Environmental Resources Center in the College of Agricultural and Life Sciences at the University of Wisconsin where she is a specialist in environmental education, focusing on community and the environment. Ms. Andrews is the former Executive Director of the North American Association for Environmental Education (NAAEE), a Principal Investigator for over 30 national or multi-state projects, and author of numerous publications.

Kate Reilly (B.S., M. Ed.) is an environmental education specialist and outreach program manager at the University of Wisconsin-Madison. Ms. Reilly has developed and managed a number of national environmental education initiatives designed to support the work of natural resource professionals and educators.

Abstract

What are we learning from natural resource professionals and educators about the challenges of applying social marketing techniques or social assessment tools in their water management strategies? The Changing Public Behavior (CPB) National Facilitation Project traveled from coast to coast in 2008 to pilot test a workshop approach to teaching innovative techniques and resources for building educator skills. We created workshop activities and a related online Self-Study Module to help Extension natural resource professionals and educators increase their skills in using and collecting audience information for designing an outreach strategy. Workshop participants completed pre- and post-workshop questionnaires assessing their skill levels and confidence in using education techniques and social assessment tools when designing outreach efforts. Participants also evaluated workshop presentations and resources. Evaluation data has been used to fine-tune workshop materials and activities, as well as the online Self-Study Module (http://wateroutreach.uwex.edu/SSModuleIntro.cfm). In this session we will:

— Identify the barriers/gaps reported by those trying to apply social marketing or other social assessment tools in their outreach work

— Review the components of the CPB training module designed to address these barriers

— Discuss opportunities for social assessment training and networking among natural resource professionals

Say It with Pictures: Training Kentucky Construction Site Workers in Erosion and Sediment Control

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Biosketch

Barry Tonning is the Director of Applied Research at Tetra Tech, specializing in water resource protection, risk communication, and technology transfer. He has coauthored a number of guidance and other documents for U.S. EPA, states, and other organizations involved in protecting public health and environmental resources, and conducts training programs on erosion and sediment control for construction sites, NPDES stormwater permitting, the Clean Water Act, and other aspects of watershed assessment, planning, and management.

Abstract

A new field guide titled *Kentucky Erosion Prevention and Sediment Control Field Guide*, prepared by Tetra Tech, Inc., is helping lead field personnel through a series of specific steps to control erosion and sediment loss from construction sites. Funding for the project was provided in part by a grant from the U.S. EPA through the Kentucky Division of Water and the Kentucky Division of Conservation. The document was adopted by both agencies after a lengthy stakeholder process and has been approved by the Kentucky Transportation Cabinet for recommending best management practices (BMPs) for erosion and sediment control for highway construction projects.

The approach taken in producing the *Field Guide* focused on the target audience: laborers, equipment operators, job site supervisors, and others responsible for daily placement, installation, and maintenance of erosion and sediment controls. Convening target audience members, regulators, and a technical advisory committee who supported the project led to several conclusions:

- Some existing field guides are "too engineery" — the BMP drawings are too technical, the information is too detailed, and the text is too dense for field personnel.
- In many cases, erosion and sediment control guidance documents assume that field personnel know where BMPs should be placed. Little guidance is found that presents a conceptual overview of where things go on the ground. For example, silt fences should be installed below bare soil areas, concentrated flows should be intercepted where possible, and small sediment traps can be installed on a temporary basis where needed.
- Pictures of good and bad BMP installations are preferred over drawings, tables, and text.
- Simple color drawings of basic concepts and practices are easier to understand than detailed technical information presented via table and text.
- Regulatory and compliance information is typically full of complex text, caveats, and jargon. Such information should be simplified, summarized, and moved back to the appendices.
- The final document should fit into a pocket, be waterproof, and be easy to browse for specific information.

The educational framework, basic approach, and graphics used in the *Field Guide* were field-tested before final production during a series of 24 workshops across Kentucky. As information on the new nationwide regulations regarding construction site erosion and sediment controls and stormwater

pollution prevention plans rolled out, attendance at the workshops skyrocketed. Participation topped 125 and more in some locations across Kentucky, as hosts from local Phase II cities sought to bring local contractors up to speed on BMP requirements.

A Stormwater Campaign in Cartoons

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Biosketches

Kathy Ottenberg has served as Program Assistant for the West Valley Clean Water Program for almost 8 years. With a double degree in environmental planning and economics from the University of California, Ms. Ottenberg started her career in the consulting field, working on General Plans, Environmental Impact Reports and Environmental Impact Statements. Working with Impact Reports involved with water use led her into the water resource aspect of environmental planning. Ms. Ottenberg's other planning interest has always been housing and low impact development (LID), so it is gratifying to see LID becoming a priority in the water resource field. With WVCWP, she has been involved in a wide range of permit compliance, from writing annual reports to analyzing pesticide use. Ms. Ottenberg especially enjoys the public outreach aspect of WVCWP where her work includes writing press releases, developing classroom presentations, and creation of new outreach material.

Kelly Carroll has worked in the municipal stormwater arena since 1990, when the first Area-wide Municipal Stormwater NPDES Permit was issued to 15 agencies in Santa Clara Valley, CA (Silicon Valley), bordering San Francisco Bay. In 1994, Ms. Carroll was hired by West Valley Sanitation District to lead its newly formed collaborative stormwater program, for four neighboring west Santa Clara Valley municipalities–the Cities of Campbell, Monte Sereno, Saratoga and the Town of Los Gatos. In an effort to give the four communities a more cohesive look and a unified voice in the community when distributing its stormwater pollution prevention message, Ms. Carroll led the way for a new branding of the collaborative called "West Valley Clean Water Program." She was instrumental in developing the municipalities' first Storm Water Management Plan. As the designated representative for the four west valley municipalities, Ms. Carroll participated in the development of 'first of its kind', county-wide performance standards for the various elements required under the NPDES Permit.

She was an active participant on behalf of the municipalities in the county-wide negotiation of the re-issuance of the NPDES Permit and throughout the county-wide program re-structuring into what is now known as Santa Clara Valley Urban Runoff Program (SCVURPPP). Ms. Carroll continues as an active participant in SCVURPPP technical and advisory committees, and provides technical stormwater best management practice training for the west valley municipal staff. In addition to coordinating the four municipalities' NPDES reporting requirements, she directs the implementation of the municipalities' Public Information and Participation program. Ms. Carroll is a registered Civil Engineer and a graduate of California Polytechnic State University at San Luis Obispo's School of Civil and Environmental Engineering.

Abstract

The West Valley Clean Water Program (WVCWP) is a stormwater agency for four very small northern California cities, and their Sanitation District. Each of our cities has a limited budget and is too small to have internal staff dedicated to National Pollutant Discharge Elimination System (NPDES) permit requirements.

Why Cartoons? WVCWP needed a low-budget means of creating a "brand" image, for use in a variety of media. The program doesn't have funds to regularly hire a Public Relations firm to create different ads and outreach materials. There are also no funds to spend on large media buys, such as ½-page ads. We wanted to

make use of our community weekly newspapers, since they're mailed to every household and are frequently read for their local news.

A Cartoon Campaign Meets These Needs. WVCWP found that cartoons fit our parameters very well. They're low budget, because the strips can be changed slightly by topic, without major costs. They can convey a stormwater message in a small space, so they don't require a large ad space buy. Cartoons are eye-catching, which makes them desirable to newspaper editors—WVCWP was able to negotiate a 50% price reduction with our local weekly papers. The discount and small size allowed for ongoing frequent exposure at a low cost.

Overall Benefits. Studies have shown that cartoons are very effective at conveying a message. The fun characters also proved to be popular with all age groups, when used in various outreach materials. The cartoons strips have worked well as a resource for our four municipal newsletters, which tend to have limited space. By running regularly, in frequently read weekly publications, the brand image gains recognition. The brand image can be used in additional venues, such as school presentations. The cartoons also provide an eye-catching, simple means of expressing a message. They can also be easily converted into educational outreach for children (i.e., line drawings as coloring pages). And finally, they are serving as a regional resource—a larger city asked to use our cartoons and ran them in their local paper.

Developing and Implementing a Comprehensive Surface Water Education and Outreach Plan for a Rural County

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Biosketch

Pat Pearson is currently Water Quality and Natural Resources Faculty, Washington State University (WSU) Jefferson County Extension. She is responsible for the design, development, implementation, and evaluation of all natural resource education programs and trainings for adults, volunteers, and professionals. Ms. Pearson partners with 28 agencies, organizations, and community groups. She has pioneered innovative watershed stewardship programs, including a 3-county WSU Shore Stewards Program for shoreline landowners to voluntarily address water quality and low dissolved oxygen issues in Hood Canal. The Shore Stewards Program expanded to include eight Puget Sound counties. Partnering in a seven county regionalization and expansion of the WSU Beach Watcher Program, she has helped actively engage over 600 residents in watershed issues and activities. Ms. Pearson developed and implemented new community surface water education and awareness programs, including a Jefferson County Surface Water Education Plan and the successful "Water Matters" and "Welcome to Your Watershed" campaigns that reached over 11,000 residents.

Previously, Ms. Pearson was the Pollution Prevention Programs Director for Puget Soundkeeper Alliance in Seattle. She designed and implemented all pollution prevention projects, including five Washington Ecology Public Participation Grants to create EnviroStars programs in Snohomish, Kitsap, Whatcom, Pierce, and Jefferson counties. As a founding member of the EnviroStars Cooperative, Ms. Pearson won the statewide 2000 Governor's Award for Pollution Prevention. She completed five grant projects offering technical assistance, education, and workshops in best management practices to boatyards, marinas and boaters throughout the Sound and was invited by the Marine Environmental Education Foundation (MEEF) to help create the National Clean Boating Campaign in 1997. Ms. Pearson has an M.A. in whole system design (WSD) from Antioch University in Seattle, Washington. WSD is a synthesis of progressive educational practices and inquiry focused on complex social systems. She also holds a B.S. from the University of Washington and graduated both Summa Cum Laude and Phi Beta Kappa.

2000 Governor's Award for Pollution Prevention – EnviroStars Cooperative
1995 National Award for Environmental Sustainability – Catalyst Program

Abstract

Surface water management is critical to protecting water quality and includes efforts to understand and protect natural systems, manage runoff, and make wise use of water resources. In order for surface water and stromwater management to be successful, the public must understand the importance of water quality and natural processes and be willing to support activities and behaviors that protect the environment. To accomplish this, Washington State University (WSU) Jefferson County Extension designed a comprehensive Surface Water Education Plan for the Surface Water Management Plan for Jefferson County, Washington.

WSU administered an initial community survey to assess community awareness and needs, designed a county-wide campaign titled "Water Matters," and developed new surface water education programs to reach targeted audiences and the general public. Watershed education newspaper inserts were distributed to

20,000 residents. A new program titled "Welcome to Your Watershed" was created to reach home and property owners. We created an eye-catching graphic folder with local information on watershed processes, answers to water/on-site septic/building related issues, landscaping and pesticide use, and a list of "Who Can Help" contacts that is distributed through partnerships with realtors, county permitting departments, existing programs, and community events. The "Green Gardening Nursery Project" provides garden nursery staffs and customers with up-to-date handouts, trainings, and workshops on fertilizer and pesticide reduction and natural lawn care. WSU incorporated surface water education for the public through community workshops, homeowner associations, and existing WSU trainings for Beach Watchers, Master Gardeners, and realtors.

To reach the younger generation, we trained 15 volunteers to teach in schools and at events using the EnviroScape watershed models. Residents now own easy-to-read newspaper supplement reference materials that keep them informed about surface water processes, issues, and responsible actions. Three state water agencies, two universities, six Marine Resources Committees, and six different county programs have expressed an interest in using the "Welcome to Your Watershed" publications to provide education to their local populations. A regionalized "Welcome to Your Watershed" version was peer reviewed and printed as a WSU water resources publication for the west coast region. Focusing on pollution prevention and education in a comprehensive campaign is resulting in an informed public engaged in making their everyday decisions with water resources in mind.

WSU also initiated a Hood Canal Shore Stewards program in three counties. The program educates shoreline landowners about ten key actions to protect shoreline and water resources. Nonpoint source pollution prevention is at the core of the stewardship encouraged by this program, and is taught using the materials provided to each new Shore Steward. These include the book "Guide For Shoreline Living," and DVD "Shoreline Living: Protecting Our Shorelines and Puget Sound." Participants receive a free metal sign in recognition of their voluntary efforts, regular newsletters, access to the resources in the regional Web site (www.shorestewards.org), and workshops by experts in a wide variety of topics. We expanded to include eight counties, regionalized, and recruited over 1,000 residents as Shore Stewards. This approach has been successful, with documented positive changes in behavior reflected in a regional 2007 survey.

Beach walks and workshops resulted in community association members contacting us to help educate their committee members and members at large, and a master planned resort condominium association requesting consultations, presentations, and planting plans for their riparian shoreline areas.

Outreach Skills Training Through the South Carolina Department of Health and Environmental Control "Polluted Runoff Outreach Toolbox"

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Biosketch

Victoria L. Kramer has been working as the Nonpoint Source Outreach Assistance Coordinator with the South Carolina Department of Health and Environmental Control since May of 2008. As part of her responsibilities, she works with stakeholder groups interested in nonpoint source issues and MS4 permitted communities across South Carolina to understand social marketing principles and apply them to their outreach campaigns. Ms. Kramer holds a B.S. in biochemistry and genetics from Texas A&M, an M.S. in plant physiology and an M.S. in agricultural and extension education, both from The Pennsylvania State University. She is also a Ph.D. candidate at the University of South Carolina's School of Journalism and Mass Communications where her research interests include scientists' perceptions of the public and their obligations to public communication.

Abstract

In South Carolina, as elsewhere, stakeholder groups and communities are facing the challenge of developing nonpoint source outreach campaigns with limited resources. Although we, as outreach professionals, recognize the budget constraints faced by many campaign planners, professional outreach skills are another limited resource. Not every organized stakeholder group may have volunteers with that skill set already developed. Many municipal separate storm sewer system (MS4) permitted communities, faced with limited budgets, must also prioritize their hires to meet their overall stormwater management needs, meaning these hires may come in with technical stormwater expertise but lacking professional outreach skills.

The South Carolina Department of Health and Environmental Control (SC DHEC) recognized that stakeholders and permitted communities needed help in developing nonpoint source outreach campaigns and conceptualized a Web-based, South Carolina-specific nonpoint source outreach toolbox to fill this gap. This idea was inspired by the U.S. EPA Nonpoint Source Outreach Toolbox, beginning as a clearinghouse concept for outreach materials.

However, input from stakeholders and permitted communities led to an expanded concept for the Web-based SC DHEC "Polluted Runoff Outreach Toolbox." Like the EPA toolbox, the SC DHEC toolbox, currently in development, will act as a clearinghouse for materials. The clearinghouse is searchable by pollutant of concern and basic audience type, and the materials listed must meet certain criteria. They must be relevant to South Carolina's polluted runoff issues. Printed materials must be currently in print and orderable or downloadable. Advertising materials must have a clear contact for obtaining permission for use.

The SC DHEC toolbox will further give visitors an opportunity to focus on the outreach process, breaking it up into nine steps. The first six steps focus on the planning process:

1) Identifying pollutants of concern,
2) Gathering partners and understanding the local area's background,
3) Identifying behaviors they want to change and alternatives to those behaviors,

4) Identifying target audiences whose behaviors should change,
5) Gathering information about target audiences, and
6) Setting goals based on pollutants of concern and target audiences and developing SMART objectives for those goals.

Each step also has a worksheet for visitors to document their planning process. While useful for any group, these worksheets are especially important for the MS4 communities whose permits require such documentation.

The next two steps (7 and 8) focus on developing the outreach program, where visitors are directed back to the materials search, and implementing the program.

Step 9, the final step, focuses on evaluation. In this step, visitors will be introduced to the types of changes they might measure (knowledge/awareness, opinions/values, behaviors and load reductions) and given a basic introduction into social science research methods (interviews, focus groups, surveys, visual observations). This step is also referenced throughout steps 1–6.

The SC DHEC Polluted Runoff Outreach Toolbox is being designed to allow workshops and training materials to be developed as add-ons. Ultimately, its Web-based format will give stakeholders and the regulated communities across the state continuous access to both training in the outreach process and the South Carolina-related clearinghouse of materials.

Using GIS-Enabled Tools for Tracking, Reporting and Communicating: Ideas for the Average Administrator

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Biosketch

John Wasiutynski is an Environmental Protection Specialist working for the District of Columbia Department of the Environment, Watershed Protection Division (DDOE). His work focuses on the abatement of nonpoint pollution, mainly through his work on the *RiverSmart Homes* program and by studying the most effective methods of reducing solid waste from entering local waterways. *RiverSmart Homes* is a DDOE program that provides District homeowners with the opportunity to learn about and adopt low cost best management practices to prevent stormwater run off. *RiverSmart Homes* also seeks to educate District homeowners about their connection to the local watershed. Mr. Wasiutynski, originally from Connecticut, has his B.S. in biology from Fordham University in New York. He worked for four years at the New York Restoration Project, an organization dedicated to the cleaning and greening of New York City through a land trust that protects over 60 community gardens and restores and maintains neglected public park lands and is the private partner in the Million Trees program. Mr. Wasiutynski has recently received his masters of public administration from the School of Public Affairs at American University, where he concentrated on environmental management.

Abstract

RiverSmart Homes is an incentive program being piloted by the District Department of the Environment (DDOE). It is meant to address nonpoint source pollution, emanating from residential developments, single family houses, townhouses and apartments. Residential properties are the single largest land use in the District of Columbia and are therefore a primary source of pollution to the District's waterways through urban stormwater runoff. The micro practices installed through *RiverSmart Homes* to curb stormwater runoff at the lot level include, rain barrels, rain gardens, planting large shade trees, converting impervious to pervious surfaces, and lawn to native perennial plants (BayScaping). These practices are complemented by the District's integrated pest management programs. *RiverSmart Homes* addresses the challenge of installing these practices on private property through marketing and financial incentives intended to make the practices desirable to residents. *RiverSmart Homes* is envisioned as one of the greatest opportunities for the District is to affect behavioral change at the individual household level.

The *RiverSmart Homes* program is administratively intensive. DDOE staff visit each site for an initial assessment. Data collected during the initial assessment is entered on paper form and then transferred into a database at the office. DDOE staff transfer information to homeowners to provide them with decision making tools and to nonprofit partners responsible for the installations. Homeowners and nonprofit partners receive information from DDOE as a stormwater audit form that DDOE inspectors create for each property. DDOE staff visit each site a second time (post installation) to verify work. To streamline and automate this process, DDOE, in partnership with the District Office of the Chief Technology Officer (OCTO), is piloting a custom geographic information system (GIS) tool to better record and track the progress of the *RiverSmart Homes* program and to communicate the progress and benefits of the program to the public. The new GIS tool will allow DDOE staff to inspect a site and generate a report with standardized data fields, notes that describe unique situations, and a GIS plan view of the property showing recommended BMPs. The GIS system will track DDOE-recommended BMPs, actual property installations, dollars spent on each property, and pollution reductions both for individual properties and in aggregate.

The third phase planned for this project will link information recorded in the OCTO-GIS database to an online service that will combine the accounting functions of the tool with a dynamic public interface. Through this Web interface citizens will see what type of stormwater reduction technologies are being employed around the city and how far those BMPs go toward reducing individual stormwater footprints. Citizens using the tool will be able to self identify BMPs that have not been installed as part of *RiverSmart Homes*. In this way DDOE staff will have a better understanding of BMPs existing throughout the city, and citizens will be able to apply for the discount programs to reduce individual impervious stormwater fees. These technology tools open a new level of communication between property owners and administrators previously not imagined.

EPA Watershed Academy's Use of the Web to Share Information

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Biosketch

Anne Weinberg is the Communications Coordinator for the Assessment and Watershed Protection Division in U.S. EPA's Office of Wetlands, Oceans and Watersheds (OWOW). Ms. Weinberg has also served as Director of U.S. EPA's Watershed Academy for a number of years. She has worked to develop new and update existing Watershed Academy Web online modules and has helped organize more than 40 Watershed Academy Webcasts since 2005, in cooperation with other U.S. EPA staff. Ms. Weinberg has also helped produce two recent videos called "After the Storm" and "Reduce Runoff: Slow It Down, Spread It Out, Soak It In" to help educate the public about nonpoint source and urban runoff issues. Prior to coming to EPA, Anne worked with the Wisconsin Department of Natural Resources (DNR) on nonpoint source and lakes issues, including publishing several Extension and DNR publications to educate the public on nonpoint source issues.

Abstract

The U.S. Environmental Protection Agency's (EPA's) Watershed Academy is a focal point on EPA's Web site at www.epa.gov/watershedacademy for providing training and information on implementing watershed approaches, including nonpoint source and urban runoff control. Watershed Academy training and outreach materials are targeted to federal, state, tribal and local officials, as well as private practitioners of watershed management and the general public. Since its inception in 1994, the Watershed Academy has used the Web as a key mechanism for training and outreach. A key component of the Academy is the "Watershed Academy Web" (www.epa.gov/watertrain) which offers more than 50 free, self-paced training modules on topics ranging from basic watershed management principles to the application of more complex technical tools. The training modules may be used individually, and also the Watershed Academy offers a watershed management training certificate for those that complete a series of 15 modules and pass their self-tests. More than 2,000 individuals have received watershed management training certificates, including people from all 50 states and 40 countries.

Since 2005, EPA's Watershed Academy has offered more than 40 Webcasts on various watershed/ nonpoint source topics. These Webcasts are free, include "hot" topics with expert speakers, and archived versions of past Webcasts are available at www.epa.gov/watershedwebcasts. These Webcasts have the potential to reach large audiences. For example, the December 2009 Webcast on rain gardens included an audience of about 1,100 people. Archived Webcasts are a resource that can be accessed by the public indefinitely. Webcasts have emerged as a very cost-effective approach for providing particularly introductory information to large audiences.

Finally, EPA has produced several educational videos that have been promoted through the Watershed Academy. The "After the Storm" video, co-produced in 2004 by The Weather Channel and EPA, has been distributed to thousands and has also been aired across the country on cable TV stations, in part to meet stormwater permitting educational requirements. In 2009, EPA released another video called "Reduce Runoff: Slow It Down, Spread It Out, Soak It In" which is posted online at www.epa.gov/nps/lid/video.html.

The Web is the primary medium that the Watershed Academy will continue to use to provide training and outreach materials to the public on our key watershed issues including nonpoint source control and urban runoff management, and on other key issues such as climate change and its impact on water resources and programs.

Addressing Public Perceptions, Understandings and Misunderstanding of Urban Stormwater Initiatives

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Biosketches

Nancy Stalker, B.S., M.A., leads the Customer and Community Initiatives for The City of Calgary Water Resources. As member of the Canadian Water and Wastewater Association Water Efficiency Network and a member of the Conservation, Efficiency and Productivity committees with the Alberta Water council, Ms. Stalker and her team are conducting public research and developing education, incentive and education programs that protect and conserve our limited water resources.

Krista Vopicka, M.S., has over five years of experience in watershed and stormwater management projects, with an interest in sustainability initiatives. Currently Ms. Vopicka is working with the City of Calgary Water Services, Strategic Planning and Policy group, where she is the Watershed Specialist. Ms. Vopicka has spoken widely on constructed wetlands, stormwater quality and stormwater source controls.

Abstract

Calgarians have little understanding of the city's stormwater system and their individual impact on our surrounding rivers (tributaries). As part of the City of Calgary's stormwater management strategy, the city and its partners are conducting LID pilot projects to demonstrate that sustainable stormwater practices can be successfully implemented. LID stormwater practices may be installed in a variety of locations including private lots and public rights of way. Current and potential practices include: rain gardens and bioswales.

In 2006 and 2008, the City of Calgary conducted research to understand Calgarian's awareness and perceptions of both the city's stormwater system and LID best practices. Specifically, the research addressed the following key objectives:

- To gauge citizen awareness of LID best practices;
- To uncover citizen understanding of LID best practices;
- To develop an understanding of general concerns/barriers related to the implementation of these best practices both from a personal and organizational level; and
- To gauge citizen acceptance or willingness of implementing LID best practices and the individual responsibility for maintenance of these best practices.

A critical starting point for any outreach program development is an appreciation of the target audience's values, attitudes, current behaviors, understandings and misconception. Relating to our key audience has been critical to both the successes and lessons learned in implementation of the city's sustainable programs. These programs include education campaigns, outreach programs and pilot LID projects. This session will outline the results of the research, development of targeted key messages and program outcomes.

Using Rainwater to Grow Livable Communities

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Biosketch

Martina Frey has more than 10 years of experience at Tetra Tech, Inc. and has been a key member of several project teams working on nonpoint source guidance development, NPDES stormwater program support, and low impact development and green infrastructure initiatives for the U.S .EPA, state, and nonprofit clients. Ms. Frey managed the development of several best management practice (BMP) guidance manuals and has also participated in field audits of NPDES Phase I MS4 programs to review program elements and BMPs being used to control urban stormwater.

Abstract

Stormwater BMPs primarily function to remove pollutants and mitigate the hydrologic impacts of development, but they can offer a host of other benefits, too—recreation, urban renewal, public education and involvement, aesthetics, enhanced property values, and others. Multi-benefit BMPs, also known as green infrastructure, may offer a solution to a conundrum facing many municipalities—how to balance regulatory requirements with public safety and quality of life concerns, all within the constraints of scarce fiscal resources. Advocates for multi-benefit BMPs need to first be armed with a set of design, negotiation, and communication tools to overcome institutional, social, and regulatory barriers to successful project implementation.

This presentation will highlight key findings of a Water Environment Research Foundation (WERF) research study of the factors that contribute to the success of a BMP beyond its engineered performance. As a foundation for this research, the multi-disciplinary project team, consisting of Tetra Tech, Inc., and Wenk Associates Landscape Architects, convened a panel of experts in stormwater engineering, policy, and landscape architecture to examine some of the issues related to BMP implementation and to identify key factors for success. The team also researched case studies from 12 U.S. cities that demonstrate some of these key factors.

Examples will be presented that illustrate how recognized leaders in municipal stormwater management brought about changes in their communities to encourage BMP innovation, including tips for success and lessons learned along the way. Specific topics include:

- Maximizing additional BMP benefits
- Working with stakeholders to change development standards
- Gaining the support of citizens and public officials
- Reaching out to build local partnerships
- Providing incentives for innovation
- Overcoming obstacles

Elements of the research project's final product, WERF's "Using Rainwater to Grow Livable Communities" Web site (www.werf.org/livablecommunities) will be showcased, including how the online tool's host of resources—fact sheets, communication aids, case studies, and more—can assist municipal practitioners, engineers, landscape architects, public officials, and others in encouraging or requiring

multi-benefit BMPs that meet a variety of needs and offer a wide range of community benefits. Future research needs and additional tools for BMP practitioners will also be discussed.

Pixels and Mashups and Blogs, Oh My! Integrating New Technology into an Effective Nonpoint Source Outreach Program

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Biosketches

John Rozum has been the Connecticut NEMO Program Director since 2003, and prior to that served as the first coordinator of the National NEMO Network. Mr. Rozum is an AICP planner, and in addition to his outreach work teaches urban and regional planning at University of Connecticut.

Dave Dickson serves as the National NEMO Network Coordinator at University of Connecticut Center for Land Use Education and Research. Mr. Dickson provides training opportunities, communication services, and coordination for the 33 NEMO programs across the nation. He has been with University of Connecticut since 2004.

Abstract

The University of Connecticut's Nonpoint Education for Municipal Officials (NEMO) Program has worked with local communities to address a wide range of natural resource planning issues. Started in 1991, NEMO is a partnership between USDA Cooperative Extension, National Oceanic and Atmospheric Administration Sea Grant Extension, and University of Connecticut's Department of Natural Resources and the Environment. Through the nearly twenty years of programming, NEMO has relied on the use of technology to emphasize and illustrate its primary message of water quality protection through natural resource-based planning.

This session will show how the NEMO program has integrated technology into its educational offerings for local decision makers. Focus will be on the use of satellite imagery, remote sensing-based land cover, online databases, interactive Web technology, and online GIS. The presenters will emphasize the educational philosophy behind each technological tool and the importance of proper planning and design in their implementation. Specific tools to be highlighted are the Community Resource Inventory Online, the Connecticut's Changing Landscape project, the Planning for Stormwater Web site, the LID Inventory and the LID Regulations Inventory.

Segmenting Residential Lawn Fertilizer Audiences in the Wekiva Study Area

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Biosketches

Leesa Souto directs public education programs at the University of Central Florida Stormwater Management Academy where she specializes in prioritizing and evaluating programs that reduce nonpoint source pollution. Her public education experience was born out of a need to teach businesses and residents the importance of environmental regulations while employed at the Florida Department of Environmental Protection and the Brevard County Natural Resources Management Office. Ms. Souto believes that the key to affecting environmentally responsible behavior is by engaging the community with motivational tools that go beyond information sharing to identifying incentives and overcoming barriers. Her goal is to help communities become better stewards of our environment and protect our natural heritage for future generations. Ms. Souto received a BS in biological sciences from Florida State University specializing in environmental science, a master's degree in nonprofit management from the University of Central Florida, and is pursuing a Ph.D. in conservation biology at the University of Central Florida. She has over fifteen years of experience as an environmental scientist and has conducted over 100 workshops targeting local government, business and industry, grade school citizens, and Florida residents.

Mary Collins is a member of the Wekiva River Social Research Team serving as a researcher and data analyst for related projects. Mary is also a first-year Ph.D. student at the Donald Bren School of Environmental Science and Management at the University of California, Santa Barbara (UCSB). At UCSB, Ms. Collins is working with Dr. William Freudenburg studying coupled human-natural systems and the environmental implications of nanotechnology. Her specific research interests focus heavily on water as a critical natural resource. More specifically, Ms. Collins studies issues surrounding water supply and quality, water policy, disproportionality analysis and theory, environmental justice, environmental sociology, and natural resource management. Prior to attending UCSB, Mary earned a master's degree in applied sociology from the University of Central Florida focusing on the environment and a bachelor's degree in sociology from the University of Wisconsin focusing on quantitative analysis. In 2009, Ms. Collins was recognized by the EPA as a NNEMS fellowship recipient.

Abstract

The presentation demonstrates how to use survey data to segment the population and inform the selection of appropriate residential audiences. The purpose of the research is to understand common landscape practices in the Wekiva Study Area and use that information to segment homeowners according to their potential to pollute and their likelihood to change behavior. Methods include a telephone survey and homeowner interviews to collect salient information about residential landscape perceptions and lawn maintenance practices. Researchers reviewed local homeowner association covenants and interviewed lawn care companies to better understand the barriers that these stakeholders may present. We will present the social data results including the statistical methods used to segment residential fertilizing audiences.

The social data will also be overlaid with water quality data to better corroborate estimated residential fertilizer load estimates. The project recruits homeowners to participate in the research by permitting a well to be installed on their property and monitored for water quality, including nitrate content. The Wekiva Study Area is a 36-square mile research transect located in central Florida, just north of Orlando. Phase I of the research included a review of available data on nitrate impacts to the Wekiva River and Floridan aquifer system, preliminary identification of relative nitrate contributions to water resources in the area, and an identification of data gaps. The Phase I report summarizes nitrogen inputs and loads by source and land use types and estimates that as much as 42 percent of the nitrogen inputs are contributed by residential fertilizer application, more even than agricultural sources. Recommendations suggest the need for finer-scale investigations of pollutant sources to better understand the nonpoint source contributions of nitrogen from residential fertilizers.

Barriers & Strategies to the Adoption of Environmentally Friendly Landscaping: Research & Case Studies

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Biosketch

Claudia Lewis currently works as an environmental education and interpretation consultant. She is also the Executive Director of Plan C Initiative, a nonprofit organization devoted to empowering communities to developing ecological landscapes in urban areas. Ms. Lewis is a conservation biologist and a psychologist by training, and an environmental educator by trade.

She has 20 years of diverse experience in the environmental education field which includes designing and running environmental education centers, designing and evaluating environmental education and interpretation curricula, programs and materials, teaching programs, and planning and conducting training workshops for educators, decision makers and community leaders. Ms. Lewis has been President of the League of Environmental Educators in Florida and serves on national, state and regional environmental education advisory boards and planning and reviewing committees.

Abstract

This presentation will review the results of interviews conducted with homeowners and landscape professionals to address their opinions, concerns and suggestions for implementing environmentally friendly landscapes. These results will be contrasted with current strategies to overcome barriers to environmentally friendly landscaping. In addition, several case studies where innovative educational and behavioral strategies were tested will be presented. Community-based social marketing interventions will be discussed and suggestions will be made about steps that professionals in the stormwater field can adapt to: a) increase the likelihood of long-term behavioral change among homeowners regarding landscaping practices, and b) move towards the creation of a paradigm shift so that these behaviors become mainstream.

Conducting Sustainable Landscape Design Charettes for Homeowners: Process and Methodologies

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Biosketch

Dr. Gail Hansen de Chapman is an assistant professor in the Environmental Horticulture Department at the University of Florida where she teaches the residential landscape design course. She is a faculty member in the Center for Landscape Conservation and Ecology (CLCE), where her extension program addresses best design practices for residential and urban landscapes. She has an MLA and Ph.D. in landscape architecture from the University of Florida. She worked for a private landscape architecture firm in Gainesville, Florida for eight years and as an adjunct faculty for seven years in the landscape architecture department at the University of Florida before joining the environmental horticulture department. Her teaching and extension programs incorporate Florida-Friendly Landscape design and management principles, with a focus on design as it relates to quality of life. Topics include design practices and principles that affect mental, physical, and financial health of citizens and the ecological health of the environment. She is also a member of the American Society of Landscape Architects.

Abstract

This presentation is a brief tutorial for conducting a design charette with homeowners who desire more ecologically sustainable and aesthetically attractive yards. The presentation will provide methods and materials needed to organize and conduct design charettes and includes common issues and concerns of homeowners.

The audience will learn the important elements of a charette that will help homeowners make design decisions and plant choices for their landscape to create landscapes that consider modern urban issues and current urban ecological concerns. The concepts and approaches are adapted from the Florida-Friendly Landscapes program, a trademark of the Florida Yards and Neighborhoods Extension program at the University of Florida in Gainesville, Florida.

The educational materials in the charette kit focus on the use of the traditional design process as a "re-design process" to consider ecological health, land stewardship, community connections, use of ornamental and native plants, and sustainable water harvesting/irrigation practices. The kit includes example handouts, forms, instruction sheets, and checklists for conducting a charette.

Data to Maps (D2M): A Hands-on Workshop

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Biosketches

Cyd Curtis (aka Trip) is an environmental scientist at U.S. EPA Region 5. She has a B.S. in biology and an M.S. in environmental health sciences. She has been with U.S. EPA for 17 years working in air enforcement, environmental data analysis and for the last 3 years in the Wetlands and Watershed Branch's Nonpoint Source Program. In addition to being the technical contact for section 319 Program with Minnesota and Wisconsin, she leads the Region 5 efforts on accountability and social indicators. She is responsible for the program applications associated with D2M and social indicators a joint project with CSREES and State Nonpoint Source Programs. She also is responsible for providing Regional leadership for GRTS within Region 5/Nationally and is working with States to make GRTS useful for their needs.

Janice Huang (aka OSO) is an Information Technology Specialist at U.S. EPA Region 5. She has been with the Water Division for 12 years providing application development, database, web, and GIS support. She is responsible for the technology component of D2M and provides technology leadership to the Water Division. In addition to D2M, Ms. Huang is a problem solver for Water Division in terms of data base management and applications.

Both Ms. Curtis and Ms. Huang are providing technical and program assistance to nongovernmental organizations (NGOs) like Prairie Rivers Network and state water quality agencies such as Illinois Environmental Protection Agency to build their capacity to develop and implement Section 319 Nine Element Watershed Management Plans and third party TMDLs. In addition they are providing technical assistance to Save the Dunes Conservation Fund in the implementation of the IDEM approved Dunes and Salt Creeks Water Management Plans and to the Region 5 TMDL Watersheds Pilots related to tracking implementation and providing accountability.

Thomas Davenport currently works at EPA Region 5.

Abstract

Locally led watershed projects need to be able to demonstrate what the water quality data of their local area is in order to attract support. Being able to show people where the problems are in the watershed is an important tool for building public support. Smaller organizations tend to be more focused on implementation and may not have the available personnel expertise or technology to pull together sampling results in a way to clearly demonstrate the water quality of their watershed.

To address this need, working with local watershed groups, U.S. EPA Region 5 developed Data2Maps (D2M). D2M is a custom Excel application in which users can overlay their sampling data on static maps and do preliminary assessment and analyses. The outputs can be printed directly from D2M or pasted into other applications (e.g., PowerPoint, MSWord) for outreach and reporting materials.

D2M requires a one-time set up for a given project (approximately 1–2 working days by an advanced Excel user). Because the set-up time is directly related to the number of sampling sites, D2M is best suited for projects with pre-determined and limited (less than 15) sampling locations. Once the application has been customized, a basic-level Excel user can maintain the application by simply pasting in the monitoring data.

Overcoming Barriers to Changing Landscape Behaviors

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Biosketches

Julia Burch is the Public Outreach Coordinator for the Sarasota Bay Estuary Program (SBEP). Ms. Burch is responsible for developing and implementing programs to raise the community's awareness of SBEP and its mission to restore this area's greatest natural asset—Sarasota Bay. She is also responsible for interacting with local schools, teachers, students, citizens, organizations and media. Ms. Burch graduated from New College of Florida with a bachelor's degree in psychology and environmental studies. Her studies at New College focused on animal behavior and environmental ethic development in humans. Ms. Burch has 10 years of experience working with children, conducting behavioral research, conducting water quality monitoring and habitat restoration. She is a Certified Florida Master Naturalist and serves on the Environmentally Sensitive Lands Acquisition Oversight Committee for Sarasota County.

Dr. Gail Hansen de Chapman is an assistant professor in the Environmental Horticulture Department at the University of Florida where she teaches the residential landscape design course. She is a faculty member in the Center for Landscape Conservation and Ecology (CLCE), where her extension program addresses best design practices for residential and urban landscapes. She has an MLA and Ph.D. in landscape architecture from the University of Florida. She worked for a private landscape architecture firm in Gainesville, Florida for eight years and as an adjunct faculty for seven years in the landscape architecture department at the University of Florida before joining the environmental horticulture department. Her teaching and extension programs incorporate Florida-Friendly Landscape design and management principles, with a focus on design as it relates to quality of life. Topics include design practices and principles that affect mental, physical, and financial health of citizens and the ecological health of the environment. She is also a member of the American Society of Landscape Architects.

Claudia Lewis currently works as an environmental education and interpretation consultant. She is also the Executive Director of Plan C Initiative, a nonprofit organization devoted to empowering communities to developing ecological landscapes in urban areas. Ms. Lewis is a conservation biologist and a psychologist by training, and an environmental educator by trade.

She has 20 years of diverse experience in the environmental education field which includes designing and running environmental education centers, designing and evaluating environmental education and interpretation curricula, programs and materials, teaching programs, and planning and conducting

training workshops for educators, decision makers and community leaders. Ms. Lewis has been President of the League of Environmental Educators in Florida and serves on national, state and regional environmental education advisory boards and planning and reviewing committees.

Kathy Shay has been working for the City of Austin for 17 years, 10 of those as the Water Quality Education Manager. She is responsible for watershed and aquifer education, and helped create the Scoop the Poop campaign as well as the award-winning Grow Green program that encourages earth-wise gardening. Ms. Shay also coordinates two inter-department programs, Green Garden and Green City, to better use the resources of the eleven City departments dealing with environmental education programs. Austin's Education program has also served as a case study for the Center for Watershed Protection's Smart Watershed Benchmarking Tool.

Leesa Souto directs public education programs at the University of Central Florida Stormwater Management Academy where she specializes in prioritizing and evaluating programs that reduce nonpoint source pollution. Her public education experience was born out of a need to teach businesses and residents the importance of environmental regulations while employed at the Florida Department of Environmental Protection and the Brevard County Natural Resources Management Office. Ms. Souto believes that the key to affecting environmentally responsible behavior is by engaging the community with motivational tools that go beyond information sharing to identifying incentives and overcoming barriers. Her goal is to help communities become better stewards of our environment and protect our natural heritage for future generations. Ms. Souto received a BS in biological sciences from Florida State University specializing in environmental science, a master's degree in nonprofit management from the University of Central Florida, and is pursuing a Ph.D. in conservation biology at the University of Central Florida. She has over fifteen years of experience as an environmental scientist and has conducted over 100 workshops targeting local government, business and industry, grade school citizens, and Florida residents.

Abstract

The panel of presenters will provide a summary of individual, cultural, and institutional barriers to changing landscape design and practices. A discussion of strategies to overcome barriers will be facilitated using examples from panel members, conference presentations, and input from the audience, resulting in a participatory problem solving discussion session. The results will be an overview of methods, strategies, evaluation tools, and measures facilitated through a dialogue with the audience. Panel members from different areas of the country will contribute to the discussion and a series of questions raised during earlier sessions will be revisited and discussed. Participation and input from the audience is encouraged as the session is dedicated to solving problems through the power of people.

Overcoming Barriers to Changing Landscape Behaviors Panel Discussion Outcomes

Potential influences on intent to behave	Target	Type of Influence	Strategies for Overcoming
Appearance preferences, (Unkempt appearance security issues, Normative appeal of bright green lawn, Curb appeal)	Homeowner	AT/SN	Demonstrate a variety of garden aesthetics and plant communities to address community differences; Use visible examples on the ground and web-based, garden tours, and sample landscape designs; Design workshops for professional and homeowners; Recognition awards.
HOA mandates	Homeowner/ Builder/ Developer	PBC/SN/AT	Develop and encourage the adoption of resource efficient landscape covenant language codes and reinforce with municipal codes; Know your regulations; Use science and design-based arguments to challenge policy; Extensions services and universities can be a source for these.
Don't value environmental quality or biodiversity, wildlife	Homeowner	AT/SN	Bioblitz is a quick evaluation and teaching/outreach program to inventory, explain ecosystem function and reconnect people with their yards, Integrated Pest Management – City of Austin has good example integrating health, persistence, and animal impacts into landscape chemical use information; Traditional mass media techniques that go above the need for education such as trending a "new look;" Information provided by organizations that have no ties to traditional landscape industries; Consider other motivations such as including edibles.
Maintenance knowledge and perceived costs more	Homeowner/ Professional	KN/PBC	Use information on cost effectiveness; Professional license oriented training with both landscape business owners and crews – best if done regionally; Green gardener type programs for homeowners and maintenance professionals; Encourage homeowner/residential maintenance company interaction; Plant guides that include plant maintenance needs; Model maintenance contracts for HOAs.
Implementation barriers (design knowledge, adequate plant materials)	Homeowner/ Professional	KN/PBC	National task force that works with corporate garden centers to develop a consistent message for providing environmentally friendly products such as native plants and appropriate fertilizers, Build local capacity for implementation among landscapers, growers, nurseries, and garden centers to ensure plants are readily available; In-store "Natural Yard Days" with displays that include plant and landscaping best practices; Provide resource lists of local landscape design and maintenance professionals that clarifies which native plants are harder to find then others in plant lists.

AT = Attitudinal, SN = Social Norm, PCB = Perceived control/Constraint, KN = Knowledge/Awareness

Light Imprint: Integrating Sustainability and Community Design

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Biosketch

Tom Low is an expert on light imprint urbanism, school design, town planning and traditional neighborhood development. As director of town planning with Duany Plater-Zyberk & Company, he has managed and completed more than 100 New Urbanism projects winning awards from the American Institute of Architects, the Sierra Club, and the Environmental Protection Agency for Smart Growth Achievement. Mr. Low also serves as the director of DPZ's Charlotte, North Carolina office, which he opened in 1995. He led the research initiative on Light Imprint urbanism, combining environmentally sensitive stormwater management techniques with New Urban community design principles and is actively involved with projects, research, and education throughout the Carolinas.

Mr. Low lectures on town planning, has taught at the University of Miami School of Architecture, the University of North Carolina—Charlotte School of Architecture, the College of Charleston, and Virginia Polytechnic Institute and State University. Through grants he received from the John Nolen Foundation, Mr. Low has completed a symposium on John Nolen's work. He recently completed the book *Civic by Design: John Nolen's Lessons for New Urbanism.* Mr. Low is currently in his third year as chair of the Charlotte Region Civic by Design Forum, and has led forums on School Design. He received his Bachelor of Architecture from Virginia Polytechnic Institute & State University, and then gained 10 years of experience in architectural practice in Charlotte. In 1989, he enrolled at the University of Miami where he earned a Master's Degree in Architecture specializing in Suburb and Town Design.

Abstract

Light Imprint is an environmentally friendly approach to neighborhood design. It employs transit-oriented development principles to create compact, walkable, mixed-use neighborhoods providing the density for sustaining public transit. To this, it adds a tool box of techniques to manage stormwater and natural drainage; both are ever-present environmental challenges that play a major role in shaping cities and towns. Light Imprint utilizes more than 60 techniques for paving streets and walkways, channeling and storing water, and filtering surface runoff before release into the aquifer. The tools are useful in both new transit-oriented development and existing communities. Done thoughtfully, this seemingly mundane engineering work not only improves the environmental impact, but also makes transit-oriented development more beautiful, livable, and economical. Light Imprint can be used to:

- Develop a strategy for sustainability and pedestrian/transit-oriented design in an economical way;
- Change the mindset of a community from an auto-centric suburban model to that of a transit-friendly neighborhood model;
- Reduce costs associated with conventional engineering practices;
- Provide an organizational framework to complement and expand the effectiveness of Leadership in Energy Efficient Design for Neighborhood Development (LEED-ND);
- Supplement other land planning approaches, including conventional suburban development, LID and BMPs.

Portland's Stormwater Marketplace: Animating Market Forces for Sustainable Stormwater Management

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Biosketches

Dan Vizzini has been employed by the Portland Bureau of Environmental Services since July 1997, with primary responsibilities involving financial, legislative, intergovernmental and public policy matters. He is the Bureau's project manager for the Stormwater Marketplace Project, liaison to the Willamette Partnership ecosystem credit trading initiative, and liaison to the Portland Small Business Advisory Council. From May 1998 through January 2008, Mr. Vizzini served as a member (and frequent chairman) of the Planning Commission for Lake Oswego, Oregon. He was born and raised in New Jersey. Mr. Vizzini earned a B.A. in economics from Boston University in 1976, and moved to Oregon with his wife in 1979.

Tom Puttman is a sustainability engineer and planner with over a decade of experience visioning, planning and designing some of the most innovative stormwater projects in the United States. From projects ranging from 1 to 300,000 acres, Mr. Puttman has considerable experience in sustainable stormwater management master planning, design, economic analysis, and regulatory compliance. He has provided expert guidance to regulatory authorities including the U.S. EPA, State of Oregon, and City of Portland regarding sustainable stormwater management, rainwater harvesting, wastewater treatment and reuse, and water rights. Mr. Puttman has worked with the U.S. Green Building Council to develop its LEED rating system and has provided engineering support to over 25 LEED projects ranging from certified to platinum. Nominated by City Council, he is also a current member of the City of Portland's Stormwater Advisory Committee. Mr. Puttman holds a B.S. in Civil Engineering with a concentration in Environmental Engineering and Water Resources Engineering and a M.S. in city and regional planning. He is also a LEED-accredited professional.

Abstract

More than 150 years of urban development in Portland have damaged our watersheds and threatened the health of our ecosystems. Limiting stormwater management to new development merely locks in the status quo. Getting back to sustainable watershed health requires substantial restoration and retrofits to existing development, investments and behaviors that far exceed "no net loss." Our challenge is to find ways to accelerate restoration to overcome the cumulative impacts of urbanization, thereby reaching a point of sustainable watershed and ecosystem health.

Sustainable solutions must be transformative. They must be undertaken at the source of stormwater runoff, mimic natural functions, be integrated into the built environment, and provide multiple benefits. Cost-effective solutions are undertaken without delay, as soon as the challenge is identified and the best solution determined based on good science and a thorough understanding of watershed goals. To be transformative, they must be adopted across the urban landscape and be so integrated into that landscape so as to be invisible to the untrained eye. They must be simple and elegant, a seemless part of the urban landscape, and maintained in ways that are commonplace for any property owner. Transformative solutions are local, private and green.

Needless to say, this is a tall order. This is an undertaking that is well beyond the resources and talents of most public stormwater utilities or municipalities. The transformation cannot occur through regulation alone. Public incentives and financial assistance can play important roles, but are not sufficient, either, to do the job. Strategies must be sufficiently simple, efficient and economical to attract overwhelming and lasting investment and participation by property owners. The marketplace and the forces of economic self-interest may hold the key. At this point, you may think that I drank the Kool-Aid, am blind to the recent excesses of market capitalism, and have lost my grasp on reality. In fact, the Portland Stormwater Marketplace Project is firmly based in reality, and founded on an evolving base of experience involving the creative manipulation of private markets. The project takes the next step by examining the propensity of property owners to invest in private stormwater management, and effect a broad transformation of the urban landscape.

This presentation will explore the findings of market research into private motivations and obstacles to sustainable stormwater investments. We will explore Portland's evolutionary path, prior experiences that have encourage the emergence of a stormwater marketplace, and plans for the next transformative steps on the road to sustainable watershed health. We will also discuss a few fundamental principles of civic engagement that inform Portland's work to animate a stormwater marketplace.

Addressing Community Concerns about Environmental Health: A Collaborative, Multi-Media Approach for San Diego's Watersheds

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Biosketch

Karen Franz, Watershed Program Director, joined San Diego Coastkeeper in January 2006 and directs Coastkeeper's watershed monitoring activities, as well as low impact development/hydromodification and community based social marketing work. Ms. Franz combines these program areas and approaches in order to promote watershed stewardship, responsible land-use decisions and positive environmental behavior change using regulatory level scientific data collected through the program. She is also the Campaign Manager of Coastkeeper's Water Supply Campaign, and leads efforts to implement knowledge management solutions for the organization. Ms. Franz has a bachelor's in geology and a master's in public international law.

Abstract

San Diego Coastkeeper is the largest and most effective professional organization working to protect San Diego's bays, beaches, watersheds and ocean for the people and wildlife that depend on them. One of Coastkeeper's most successful programs is the Water Quality Monitoring Program. Our data is collected as a coordinated effort between nonprofit and municipal agencies, and is completely fueled by volunteer efforts making it an effective platform for citizen involvement in watershed stewardship since 2006. In addition to collecting chemistry, field screening, trash, habitat and observational data, this program analyzes samples in its on-site water chemistry laboratory, records data in accordance with state-established data protocols, manages data and generates publicly accessible interpretations after each event.

As the only program in San Diego County conducting monthly snapshot monitoring of the health of the region's surface waters, Coastkeeper recognizes that an important part of the program is to share the data in a timely manner to members of the public through an online, publicly accessible portal. For this purpose we have established a wiki site (www.sdwatersheds.org), which is a collaborative and transparent tool to disseminate the data collected through our water quality monitoring program. Using an Arc GIS platform, information-packed data interpretation maps are created and published which greatly enhance comprehension of our sampling and monitoring results. The wikipedia medium helps us reach out and distribute information to anyone who has access to the Internet.

We plan on making the wiki more effective by integrating it with social networking sites such as Facebook and Twitter, and share photos and videos using Flickr, YouTube and others. Integrating multiple social networking platforms with the wiki helps appeal to a wide range of audiences and initiates participation and discussions among users using the tool of their choice. Also, schoolchildren and community members, whom we aim to empower to take action to protect and restore our local waterways, will be better able to understand our data and information when presented graphically and using current technological trends.

In order to serve as an educational resource and to ensure complete transparency, all our field manuals, lab protocol documents, and Quality Assurance Project Plans are published on the site along with various Water Quality Monitoring resources.

During challenging circumstances, where resources are limited and environmental data are more critical than ever, our community-supported approaches allow for cost-effective, targeted methods to address environmental concerns. The charm of this collaborative, interactive medium is that it is constantly improving and expanding to best address community concerns and needs.

Planning and Evaluating Mass Media PSA Campaigns for Stormwater

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Biosketch

Sarah Bruce has coordinated the activities of the North Carolina Clean Water Education Partnership since 2004. Ms. Bruce has a master's in regional planning from University of North Carolina—Chapel Hill, where she also obtained her B.A. in environmental aesthetics (Interdisciplinary Studies), a self-developed curriculum on the relationships between culture and ecology. She is also the Executive Director of the Upper Neuse River Basin Association, a cooperative partnership of local governments and other entities with an interest in the Falls Lake watershed, the headwaters of the Neuse River. Before she started staffing these programs for North Carolina's Triangle J Council of Governments, Ms. Bruce published research and conference proceedings for the National Institute of Environmental Health Sciences and provided hazard mitigation planning technical assistance to local governments for the North Carolina Division of Emergency Management. She is also a Certified Floodplain Manager, a fellow of the Natural Resources Leadership Institute, and co-founder of The Village Project, a nonprofit organization dedicated to promoting low impact and transit-oriented development.

Abstract

Mass media is an important vehicle for conducting stormwater outreach, but planning and evaluating the effectiveness of mass media campaigns can be challenging. Media-specific statistics and terminology may hamper the ability of nascent stormwater programs to utilize mass media for public outreach. Moreover, it can be difficult to know whether expensive mass media advertising is having any effect on knowledge or behavior of the public with regard to stormwater issues.

The NC Clean Water Education Partnership (CWEP) is a cooperative effort of 30 local governments in the Neuse, Tar-Pamlico, and Cape Fear River Basins of North Carolina that have collaborated since 1992 to conduct stormwater outreach to the public using mass media. CWEP has surveyed the public before and after its 2007 media public service announcement (PSA) campaigns to gauge public awareness and behavior change in response to the campaigns. We are analyzing survey findings (which did show a difference in public knowledge and behaviors between pre- and post-campaign surveys), researching literature from marketing and other fields, and looking at reports from other programs to develop guidance on planning and evaluating mass media PSA campaigns. Lessons learned from this project will be presented along with recommendations on how mass media should be coordinated with other outreach activities. Input from the professional community is desired and timely.

The organization's Web site is www.ncCleanWater.org. CWEP has also started an online discussion forum on evaluating public outreach campaigns; see the Outreach tab on the Web site. Anyone is welcome to join or just visit.

Green from the Ground-Up: Evaluating Impacts and Program Effectiveness of a Nature-Friendly Development Practices Education Series

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Biosketches

Megan Kleibacker, Oregon State University (OSU) Sea Grant Extension Watershed Education Program Associate, is experienced in watershed related program planning, evaluation and implementation for both youth and adult audiences. Ms. Kleibacker worked closely with Metro's Nature in Neighborhood personal, Gail Shalom and Lyn Bonyhadi, to create the evaluation plan for the Green from the Ground-Up series, in addition to evaluating other low impact development education and outreach programs delivered in Oregon. She is based on campus at OSU in Corvallis, Oregon.

Abstract

Agencies and organizations now realize the extent that nonpoint source pollution and various building practices impact our water quality. These groups are being increasingly tasked to find solutions that curb the affects of nonpoint source pollution, while their resources are simultaneously decreasing. Creating partnerships to leverage resources and coordinate workshops is one method that is frequently employed to reach this goal. Information is shared with stakeholder groups, in the hope that imparting this knowledge to the right audiences will yield on-the-ground results, and ultimately improve water quality over time.

Metro's Nature in Neighborhood's Green from the Ground-Up seminars are one such example. The seminar series is an educational component of an initiative aimed at educating developers on and encouraging them to use nature-friendly development practices. The project was partially funded by an Oregon Department of Environmental Quality Section 319 grant and developed by Metro, Clackamas County Soil & Water Conservation District and Clackamas River Basin Council. To prepare for the series, organizers conducted a thorough needs assessment with the target audiences; used partnerships to generate interest and participation; found local, regional and national experts to present on key topics; and worked with certifying boards to obtain the ability to offer continuing education credits for BOMI (Building Owners and Managers Institute), Real Estate Brokers, and Certified Master Builders as further incentive to prospective participants.

Does this mean their workshop series was an automatic success? And how, exactly, will they know for sure? Evaluation is an important part of program planning, and is too often glossed over or pulled together at last minute. True program evaluation goes beyond whether the workshop participants were satisfied with their experience, and if they did or did not like the catered lunch options. Did the attendees increase their knowledge due to their participation in the workshop, and will their behavior change as a result of this new knowledge? Will that behavior change be ultimately reflected in increased adoption of best management practices, and will that lead to improved water quality?

Oregon State University (OSU) Extension Service and Oregon Sea Grant Extension were asked to join the strong list of partners providing resources towards the Green from the Ground-Up series. Tapping into the institution's technical knowledge and strong application track record, OSU/Sea Grant Extension conducted a formal evaluation to help answer some of these questions. The evaluation plan focused on multiple aspects of the Green from the Ground-Up seminar series; including dissemination of tools and knowledge after the workshop, intent to implement, extent of intended implementation, and identification of obstacles to implementation.

Lessons in Citizen Engagement: Embracing Green Infrastructure

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Biosketch

Mandy Stark, the City of Lenexa's Watershed Outreach and Education Specialist, administers the public outreach and public involvement components of the Rain to Recreation program. A graduate of Kansas State University, Ms. Stark's degree is in environmental communications and journalism, with a secondary major in natural resources and environmental sciences. Prior to working for the City of Lenexa, Ms. Stark was a Communications Coordinator at Harvesters, Kansas City's food bank.

Abstract

Conventional stormwater systems convey water as quickly as possible away from developed areas without regard for water quality, stream functionality and wildlife habitat. Unintended consequences of these practices in Lenexa included increased runoff, impaired water quality and significant flooding. Rain to Recreation, Lenexa's innovative watershed management program, aims to reduce flooding, protect water quality and natural habitat and provide educational and recreational opportunities to residents. Viewing stormwater as an amenity, not a liability, the program utilizes green infrastructure to sustainably manage stormwater. A city-wide commitment to green infrastructure is the result of policy, practice and engagement efforts.

Policy. Lenexa's visioning process identified a need for environmental stewardship and green infrastructure throughout the city. Rain to Recreation used this directive to employ green infrastructure policies, including:

— A stream setback ordinance protects 100-year floodplains from development, creates streamway parks and trails and provides habitat connectivity for wildlife. Approximately one-tenth of the city (about three square miles) is protected.

— Lenexa's watershed-based comprehensive plan examines land use for opportunities to employ green infrastructure with an emphasis on quality of life, education and engagement.

— Applying lake management Zones of Influence balances public needs with environmental integrity. Buffer zones, treatment trains and other green infrastructure techniques address water quality, wildlife protection and lake health concerns.

— City ordinance requires Level of Service calculations that include many green infrastructure options, including native plantings and bioretention cells.

Practice. Lenexa set a regional example by tackling flooding and severe streambank erosion with green infrastructure:

— Lenexa addressed flooding and erosion problems using CIP funds to build stormwater BMPs, from streambank stabilization projects to bioretention cells to pervious pavement.

— The city seeks out and employs a highly technical watershed staff, specializing in everything from engineering, forestry and even marketing, establishing Lenexa as a regional and national leader in implementing green infrastructure and creating public buy-in.

— Watershed staff showcases both city-managed and private green infrastructure projects as examples to contractors and developers—making Lenexa a local resource and a leader. As an additional asset, staff offers tours and technical assistance to industry professionals, residents, businesses and other municipalities.

Engagement. While Lenexa's visioning process engaged many citizens, green infrastructure outreach goes even further to comprise:

— Using green infrastructure for stormwater management engages citizens in community improvement by promoting open space, raising property values and creating a distinctive aesthetic, all while saving as much as 25 percent over traditional infrastructure.

— Design charettes provide public support needed for long-term success. Engineers, landscape architects and natural resource professionals partner with staff and citizens so green infrastructure solutions fit suburban neighborhood expectations without losing function.

— Neighborhood meetings, newsletters and Web outreach address citizen concerns, including:

- The selection of native plants addressing height, color and maintenance;
- Utilizing transition zones between manicured areas and native plantings to avoid abrupt delineation;
- Helping citizens understand "low maintenance" plants versus "no maintenance."

Green Retrofits for Schools via Rain Gardens

Karen Fuss

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Biosketch

Karen Fuss serves as the Coordinator of the Coastal Waccamaw Stormwater Education Consortium. In this position, she is responsible for collaboration and facilitation among 6 core education providers who aid eight local municipalities in meeting federal stormwater requirements for public education, outreach and involvement. Ms. Fuss works as an Environmental Educator for the Center for Marine and Wetland Studies at Coastal Carolina University in Conway, South Carolina. Her major responsibilities include: stormwater and watershed education through field workshops, presentations and trainings with municipal officials and staff, precollege (K–12th grade) students and teachers, and local citizens; and marine education and outreach for student and adult groups.

Abstract

The Coastal Waccamaw Stormwater Education Consortium (CWSEC), through an ongoing partnership with county and city stormwater departments, regional schools and a national retail store, continues to create several demonstration and educational sites showcasing stormwater BMPs on the campuses of schools in northeastern South Carolina. This unique private-public partnership supports CWSEC's mission to develop and implement effective, results-oriented stormwater education and outreach programs to meet federal requirements and satisfy local environmental and economic needs. More specifically, the Consortium helps small municipal separate storm sewer systems (SMS4s) in coastal South Carolina meet the National Pollutant Discharge Elimination System (NPDES) Phase II Stormwater Program's General Permit Minimum Control Measures 1 (Public Education and Outreach) and 2 (Public Involvement and Participation). CWSEC consists of six regional agencies that jointly serve as core education providers for eight member coastal municipalities. For more information on CWSEC, please visit www.cwsec-sc.org.

Five stormwater retrofit projects have been completed over the last year with additional projects being scheduled for 2009. During these retrofits, students, teachers, employees of Wal-Mart and local stormwater departments, and CWSEC members work together to install bioretention cells (rain gardens) at Horry and Georgetown County schools. Funding for the projects is provided by regional Wal-Mart stores in the form of grants through each store's sustainability program. Information on stormwater pollution and innovative solutions is incorporated into the schools' curricula which include classes in environmental science, chemistry, marine science and horticulture at the high school level and in science, language arts, math and art at the elementary schools. The majority of the grant money that the schools receive goes toward purchase of educational resources such as water quality and soil monitoring equipment, weather stations, hands-on watershed models, and sampling gear for habitat bioassessment studies. The classes use the various equipment to conduct monitoring and data analysis to determine the effectiveness of the treatment practices.

Objectives for these projects include the following:

— Reduce stormwater runoff into surrounding water bodies;

— Improve drainage on the schools' campuses;

- Provide educational and research opportunities for students using hands-on activities to involve students in the scientific method;
- Promote community involvement in a school project;
- Serve as a model of stormwater BMPs for other local schools, businesses and neighborhoods; and
- Enhance the aesthetic quality of the school grounds.

Following the success of the first four rain garden installations, the regional Wal-Mart requested that CWSEC and the stormwater departments continue to partner on additional bioretention cell installation projects at public schools during 2009. Moreover, municipalities and neighborhood communities have requested technical assistance from CWSEC education providers for rain garden projects. These demonstrations serve as educational tools to a wide audience as examples of stormwater BMPs, resulting in a greater number of stormwater control BMPs across the region and promoting their use among residents and businesses.

People as Part of Stormwater Infrastructure: Integrating Education and Partnerships into a Large-Scale Sustainable Stormwater Management and Watershed Enhancement Program

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Biosketches

Anne Nelson works on a variety of community and multi-bureau partnerships with the City of Portland, Oregon's Bureau of Environmental Services. Ms. Nelson focuses on linking watershed health projects and policy mandates with university research and community initiatives to build community-academic-jurisdictional partnerships to steward green stormwater infrastructure and urban watershed enhancement projects. She holds a master's degree in environmental studies focused on water quality and community-based solutions to water quality improvement.

Rhetta Drennan works on a variety of community and multi-bureau partnerships with the City of Portland, Oregon's Bureau of Environmental Services. She focuses on community outreach and involvement for capital improvement projects in pre-design, design and construction phases, as well as bureau policy issues related to community outreach. Ms. Drennan has a diverse work background including construction, drafting, and customer service within the business community. For the past 12 years she has worked in the public sector, with Portland neighborhood and business associations on projects and programs addressing public safety and public works.

Erica Timm is a graduate student in urban and regional planning at Portland State University and a research assistant at the City of Portland, Oregon's Bureau of Environmental Services. She works on community outreach for the Tabor to the River: Brooklyn Creek Program, focusing on linking people's interests to potential watershed health actions, building partnerships and creating fun and unique ways people can become involved in the program. Her background includes an undergraduate degree in environmental studies and geography and work experience in event planning, volunteer coordination and policy research.

Abstract

The Tabor to the River: Brooklyn Creek Basin Program is a multi-faceted program within the City of Portland's Bureau of Environmental Services, integrating sewer system upgrades with watershed health enhancement in a heavily urbanized area of inner SE Portland, Oregon. Over the next 10+ years in a 2.3-square mile area, the program will:

- Install 500 sustainable stormwater facilities in the right-of-way
- Implement 100 private property stormwater retrofit projects
- Plant 4,000 street trees
- Remove invasive plants and plant natives in key parks in the project area

- Partner with community groups, K-12 schools, universities, businesses, community and religious organizations to promote individual responsibility for stormwater management and create a community-wide excitement about being part of the largest sustainable stormwater and watershed enhancement program ever undertaken in Portland
- Replace and repair 81,000 feet of pipes

The Education, Communication, Outreach and Public Involvement Program (ECOPIP) is an integrated component of the overall Tabor to the River: Brooklyn Creek Basin Program that works with the other program elements and leverages existing city program resources to inform, engage, motivate and partner with the community to manage stormwater as a resource and take responsibility for overall watershed health. The scale of the infrastructure program is matched by a large-scale outreach program to truly partner with the community to successfully implement the program.

The outreach objectives are achieved through:

- Community assessment
- Partnership building
- Continuous community-wide media presence
- One-on-one property owner involvement including choosing plants for stormwater facilities
- General educational activities such as art exhibits, walking and bicycle tours, boat tours, and participation at local neighborhood events
- Communication tools such as newsletters, articles in local newspapers and individual mailings
- Hands-on stormwater education activities for local school groups
- Stewardship opportunities including plantings and stormdrain marking
- Incentives and resources for private property stormwater management
- Long-term program evaluation in partnership with university faculty

By managing stormwater at the surface with sustainable stormwater facilities and trees, we now are asking people to be part of the stormwater infrastructure that used to be unseen. In order to create strong community partnerships, city staff created a long-term program to engage the community in fun and meaningful ways to create the social infrastructure necessary to help steward the sustainable stormwater infrastructure. The program will continue to adapt as evaluation results are analyzed so that scare outreach resources are used efficiently.

Participants at this session will come away with ideas for fun and innovative techniques to partner with the community and engage property owners. These techniques can help create long-term stewardship partners with community members to manage stormwater as a resource and enhance urban watershed health.

Closing Remarks

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Biosketch

Rebecca Power is the CSREES Regional Water Liaison to federal and state agencies, nonprofit groups, and businesses working on water quality issues in Minnesota, Wisconsin, Michigan, Illinois, Indiana, and Ohio as a part of the Great Lakes Regional Water Program. She is a water resource specialist at the University of Wisconsin-Extension, and is a member of the multi-state team developing and helping to implement a suite of social indicators in U.S. EPA Region 5 nonpoint source programs. Ms. Power provides evaluation assistance to water resource projects across the Great Lakes Region.

People's Choice Awards – Finalists

Best Television PSA for Yard Care:

"Dan-D-Lion,"
Grow Green, Austin, Texas
www.ci.austin.tx.us/growgreen/big3_tv.htm

Best Television PSA for Vehicle Maintenance:

"Oil & More" (Automotive)
Think Blue San Diego, California
www.sandiego.gov/thinkblue/videos/index.shtml

Best Television PSA for Pet Waste:

"Clean Paws"
Gainesville Clean Water Partnership, Florida
www.alachuacounty.us/government/depts/epd/waterquality/petwaste.aspx

Best Television PSA for Waste Management:

"Agents Smith & Jones" (Don't Trash Clark County Public Service Announcement)
Clark County Regional Flood Control District, Nevada
www.lvstormwater.com/education_media.htm

Best Television PSA for General Stormwater Education:

"Karma"
Think Blue San Diego, California
www.sandiego.gov/thinkblue/videos/index.shtml